DOCUMENT RESUME

ED 269 274 SE 046 596

AUTHOR Friedman, Judi
TITLE Jelly Jam, the People Preserver. An Environmental Self-Teaching Activity Book. Bermuda Edition.
REPORT NO ISBN-0-910812-29-2
PUB DATE 85
NOTE 69p.; For the version to be used in the United States see ED 247 195.
PUB TYPE Guides - Classroom Use - Materials (For Learner) (051)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Basic Skills; Elementary Education; Elementary School Science; *Environmental Education; Experiential Learning; Independent Study; Interdisciplinary Approach; Learning Activities; *Pollution; Reading Instruction; Social Studies
IDENTIFIERS *Bermuda

ABSTRACT

Designed for students in grades 2 through 4, this self-teaching, interdisciplinary reading and activity program approaches the environmental conditions, the state of natural resources, and the problems of pollution in Bermuda. A caring little animal named Jelly Jam is used to help children understand how air, water, and land pollution affect their own lives and what they can do to help clean up the environment. Children read about ecological problems and through experiments, field trips, plays, songs, coloring activities, crossword puzzles, mazes, and a host of school and family anti-pollution activities learn how to be involved in solving the problems. The guide also presents self-corrective activities, a word list for vocabulary improvement, and answer pages for student self-teaching. (ML)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED269274

Jelly Jam™

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Edwin P. Rodgers

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

THE PEOPLE PRESERVER™

by Judi Friedman

an environmental self-teaching activity book

SE046596

Jelly Jam, The People Preserver

BERMUDA EDITION

TABLE OF CONTENTS

Part One: Introduction
- Jelly Jam Cares ... 1-3
- Our Environment ... 4
- An Experiment ... 5
- Helping Bermuda ... 6

Part Two: Land Pollution
- Trash: Some Examples ... 7-8
- Where Trash Goes ... 9
- Some Answers
  - Stopping Litter ... 10
  - Recycling ... 11
  - Reusing ... 12-13
  - Composting ... 14
  - Buying Carefully ... 15-16
  - Buying Less ... 17-18
- Land: Using It Carefully ... 19
  - Saving Special Places ... 20

Part Three: Water Pollution
- Some Examples
  - Fresh Water ... 21-23
  - Salt Water ... 24
- Some Answers
  - Saving Water ... 25-27
  - Keeping Water Clean ... 28
  - Stopping Litter ... 29
- Water Riddles ... 30

Part Four: Air Pollution
- Some Examples ... 31
- Some Answers
  - Stopping Smoking ... 32
  - Making Less Noise ... 33

Part Five: Land, Water and Air Pollution
- Some Examples
  - Bug Sprays ... 34
  - Oil and Gasoline ... 35-36
- Some Answers
  - Using Less Sprays ... 37-38
  - Using Less Gasoline ... 39-40
  - Using Less Oil ... 41-42
  - Using Even Less Oil ... 43-44
- More Answers
  - Learning About Wind ... 45
- Pollution Puzzle ... 46-47

Part Six: Conclusion
- Books to Read and Write ... 48
- Gardening and Fishing ... 49
- Laws for a Clean World ... 50
- War ... 51
- Pollution = Money ... 52-53
- Review Puzzle ... 54-55
- Games ... 56-57

Part Seven: Jelly Jam's Answers ... 58-62

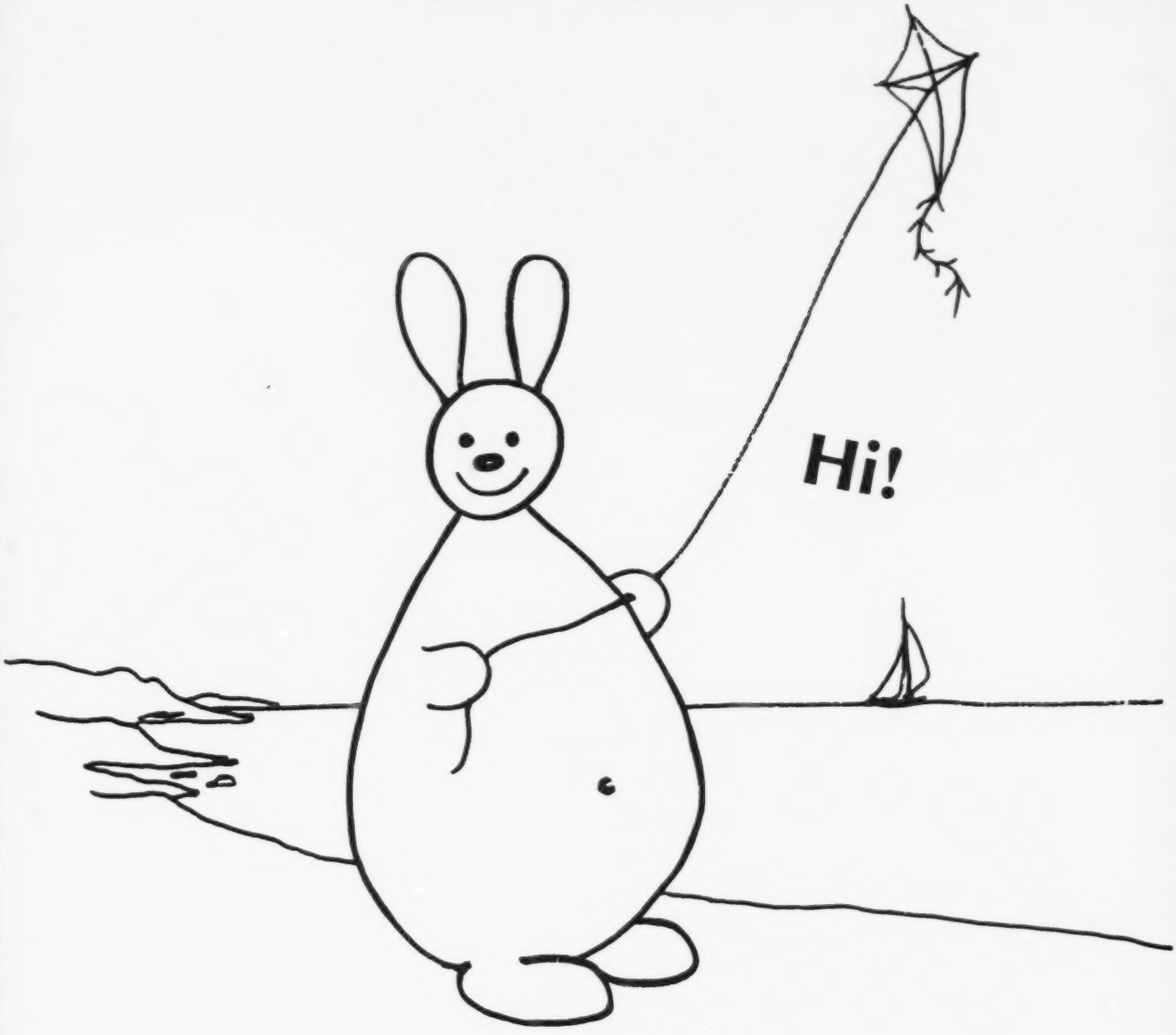
More Jelly Jam ... 63

Copyright Notice ... 64

Acknowledgements ... Inside Back Cover

Part One: INTRODUCTION

JELLY JAM CARES

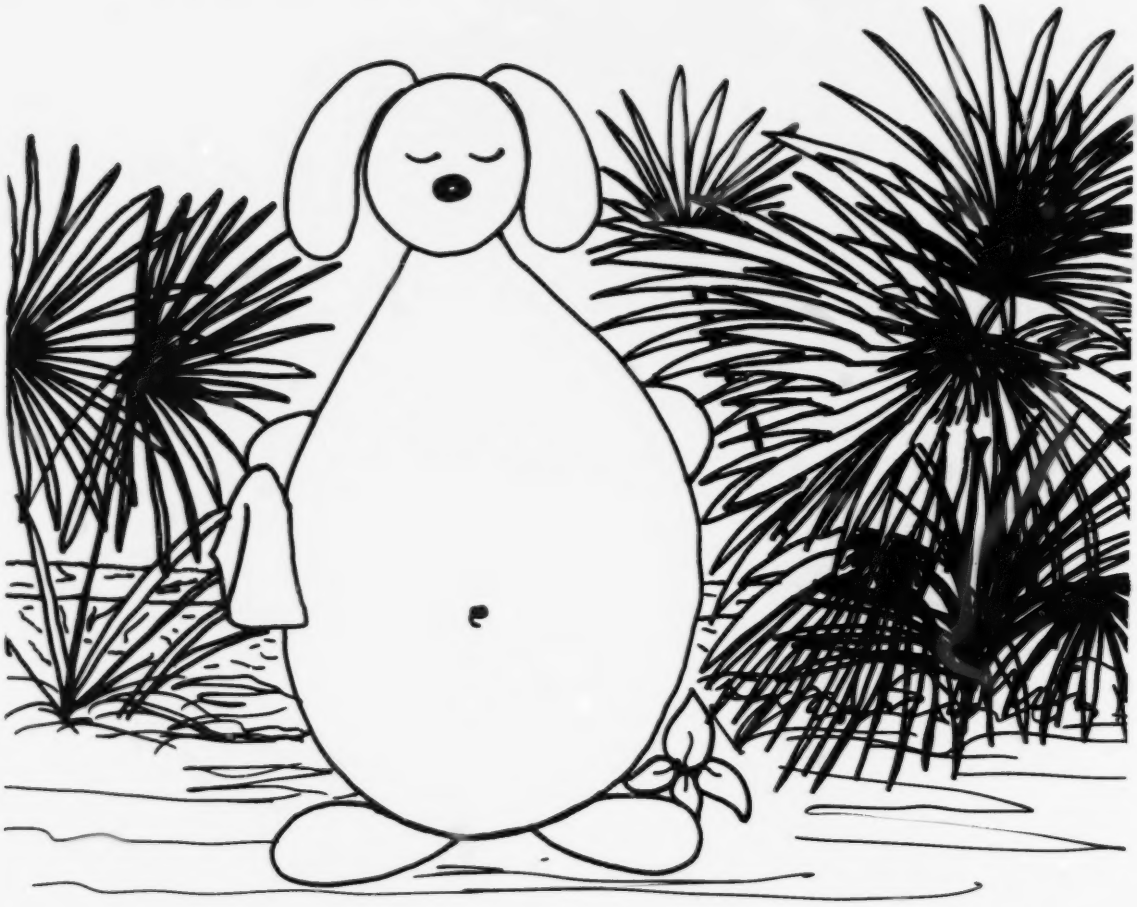


My name is Jelly Jam. I am a friend of the people of Bermuda. I want to help keep them safe from harm. That is why I am a People **Preserver.**

A People Preserver is a very special make-believe animal who wants to help people.

But I am sad.

Some people are being careless. Other people are making problems. They have not learned how to take care of our Island and our Earth.

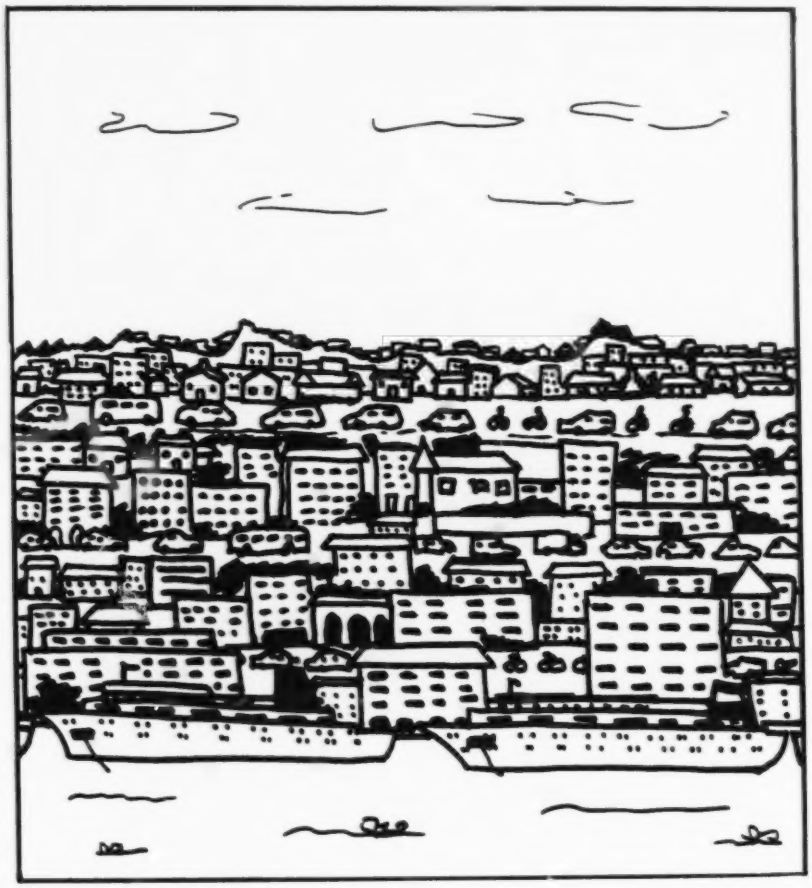


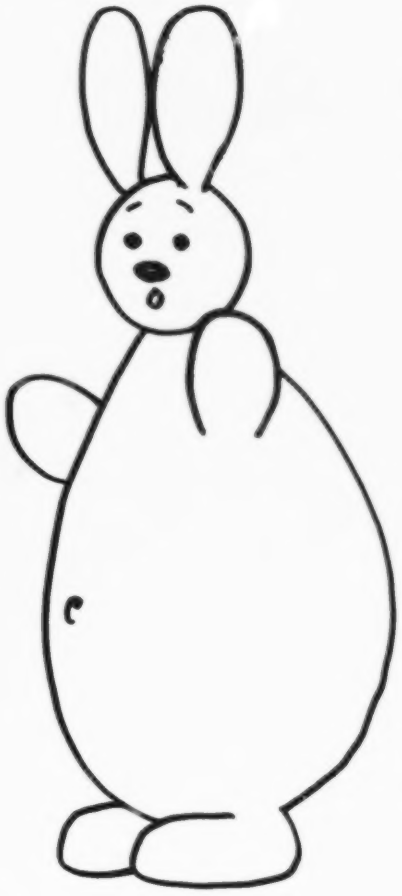
Make my face look sad.
Then draw tears falling from my eyes.

People are doing harmful things to our land, our water and even our air. They are making **pollution**.

Too many people making too much pollution will hurt Bermuda.

Let's stop and see what we are doing.





Are you one of those people?

Yes_____ No_____

Are you sure? _____

Let's find out ...

(Answers are on page 58.)

OUR ENVIRONMENT

All the things around us are parts of our Bermudian **environment**. Some of those things are shown below.

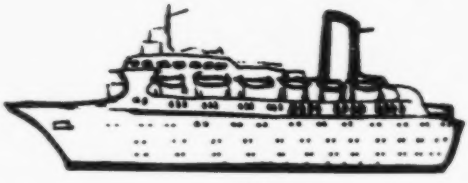
cloud

rain

car

plant

home



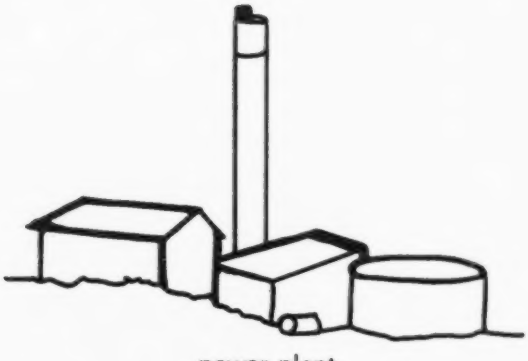
ship

fish

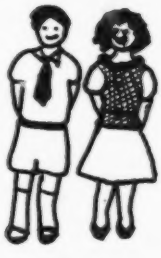
broken bottle

bird

flower



power plant



people

Draw a circle around anything that is made by people that may change our environment in a harmful way.

7

AN EXPERIMENT

Plants, animals and people need clean land, clean water and clean air. Find out what happens to a living thing when its environment is polluted or changed in a harmful way. Try doing this experiment at home or in school.

EXPERIMENT

1. Cut four **geranium** leaves from one plant.
2. Put each cutting into its own glass of water.
3. Now pollute the water in three of the glasses.
   a) Put two tablespoons of **vinegar** into one glass. Write **ACID** on a piece of tape. Put it on the glass.
   b) Fill the second glass with bits of meat, vegetables and newspaper. Write **TRASH** on that glass.
   c) Put two tablespoons of oil into the third glass. Write **OIL** on that glass.
4. Now write **WATER** on the fourth glass.
5. Put the four glasses near a sunny window. Watch the leaves for two weeks.

Colour the four large leaves.

After two weeks circle the picture that shows the leaf that looks best.

What happened to the other leaves? _____

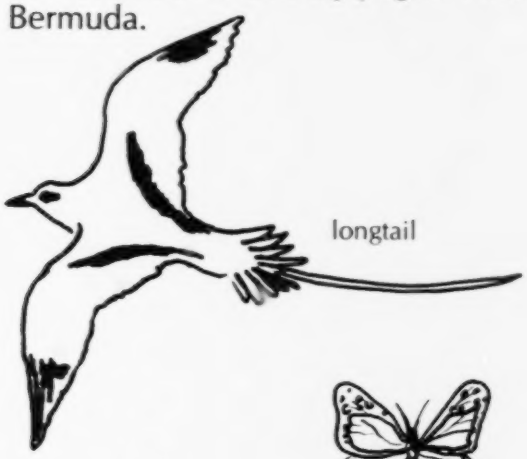
_____

HELPING BERMUDA

You cannot see some of the pollution on our Island, but you can find out about it.

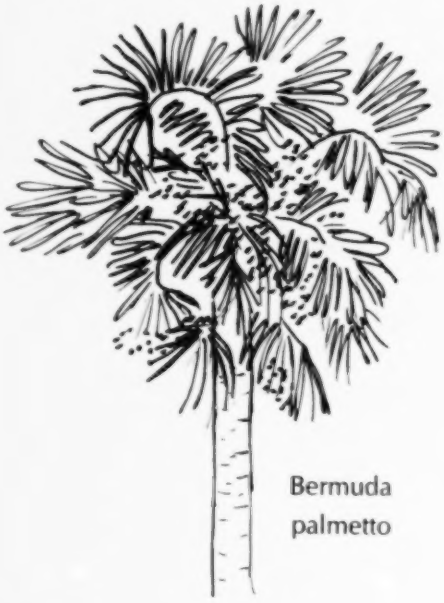
As you read this book, write down your questions about pollution in Bermuda. Then ask your teacher to help your class write to the people who work at the **Ministry of The Environment**. (See address on page 53.)

Read the following pages. Find out how you can help to clean up Bermuda.



longtail

monarch butterfly



Bermuda palmetto

Bermuda cedar

green turtle

cardinal

cahow

Bermuda skink

Colour the living things.

Circle the ones that live only in beautiful Bermuda.

Some of the living things are in danger. They may disappear forever from this Earth. Underline any living thing that is **threatened**.

Part Two: LAND POLLUTION
TRASH: SOME EXAMPLES

H E L P !

We're making large piles of trash. Trash is made up of boxes, bags, papers, plastics, cans, clothing, furniture and bottles. It is also made up of old food called garbage.

Draw a sad mouth on my face.

About one kilogram of trash per person is thrown away every day in Bermuda. Write the name of something that **weighs** one **kilogram**.

_____

Every year there are MORE and MORE people throwing away MORE and MORE things.

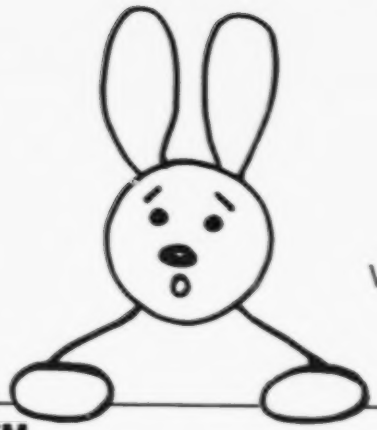
Put an **X** next to anything that you threw away in the wastebasket yesterday.

paper napkins	____	**magazine**	____	newspaper	____
milk carton	____	paper	____	can	____
gum wrapper	____	comic book	____	sock with a hole in it	____
bottle	____	old toy	____		
broken toy	____	book	____	something else	____

Now look at your **X**'s. Put a red circle around anything that you could have used again, fixed, given away or sold.

Does your family throw away a lot of trash each day?

Yes_____ No_____



WOW!

PROBLEM

(Ask your teacher or parent to help you.)

There are about 56,000 people living in Bermuda. If each person throws away one kilogram of trash, how much trash is thrown away each day in Bermuda?

_____ people × _____ kilograms = _____ kilograms per day.

There are 365 days in a year. How many kilograms of trash are thrown away each year in Bermuda?

____ days × ____ kilograms per day = ____ kilograms per year.

AND THIS KIND OF TRASH DOES NOT INCLUDE STOVES, REFRIGERATORS, CARS, FURNITURE OR OTHER BIG THINGS.

Some trash stays around for a long, long time.

1. Try to guess how long it might take for one heavy **plastic** bottle to fall apart. Circle the right answer.

   one month ten years more than thirty years

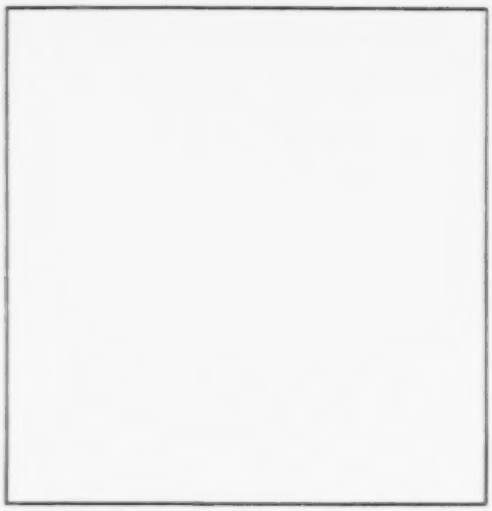
2. Which thing stays on the ground longer if it is not picked up? Circle the right answer.

   paper cup **styrofoam** cup

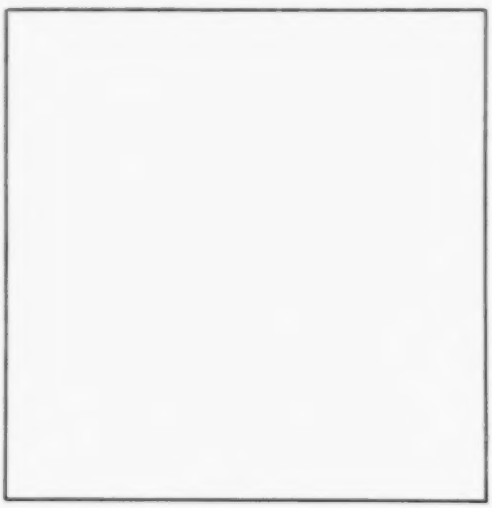
WHERE TRASH GOES

The trash does not disappear.

Some trash becomes **litter**. I do not want to see ugly litter on the land or in the water. Draw me with my eyes closed or covered.

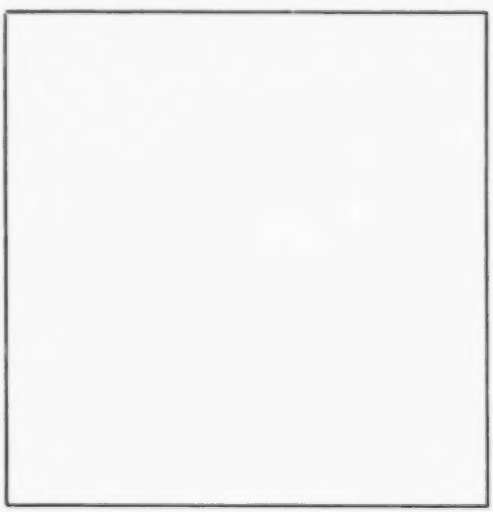


When trash is dumped, it can smell. Draw me smelling bad trash smells.



Some trash gets burned. When plastics and some other man-made things are burned, **gases** are given off. Too much of these gases can make people and animals sick.

Draw me looking upset.



SOME ANSWERS
Stopping Litter

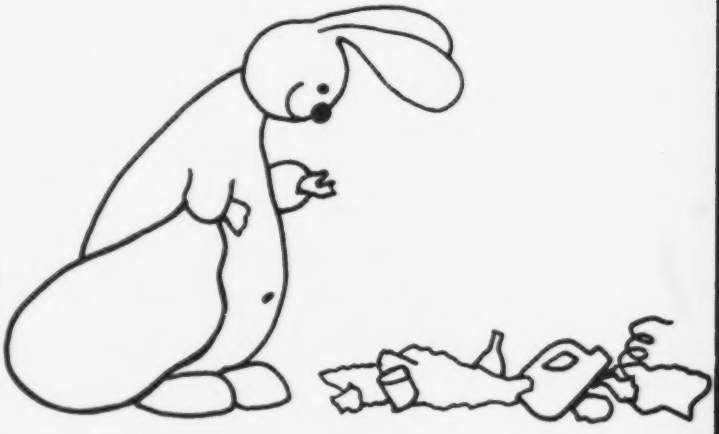
Stop litter. Don't throw anything out of the car windows. Put a litter bag in the car.

Be sure that the top of your trash can fits well. Draw me closing the top tightly.

Now the trash will not smell as much. Dogs will not be able to get the garbage out.

Pick up litter around your school and home.

If there is too much trash, call the **Public Works Department**.



I am so happy when you never throw anything on the ground or in the water. Draw me smiling at you.

Recycling

We must learn to use things over and over again. Then there will not be as much trash.

One way to do this is by recycling. When something is recycled, it is changed into a new thing. It is used again. It is not thrown away.

To help you understand what happens to a bottle when it is recycled, do the following experiment with the help of your parent or teacher.

EXPERIMENT

1. **Melt** a chocolate bar slowly in a pan on the stove.
2. Stir the chocolate so it does not burn.
3. When there are no lumps, put the chocolate into a small dish or a **mould**.
4. Let the chocolate get cold.

The chocolate is still chocolate. Only its shape has changed.

When a used glass bottle is recycled, it is melted into **liquid** glass. The hot glass is poured into a mould. Then the glass cools. The mould is taken away. Now a new bottle has been made from an old bottle.

Write a class letter to the Minister of Public Works in Hamilton. See if you can help a recycling group in Bermuda.

Reusing

Another way to make less trash is to reuse things as they are.

Comics or pretty pictures can be put around presents. The comics do not cost any more money, and the paper is used twice.

Colour the presents in the picture.

Clean glass jars can be reused to store food or other things.

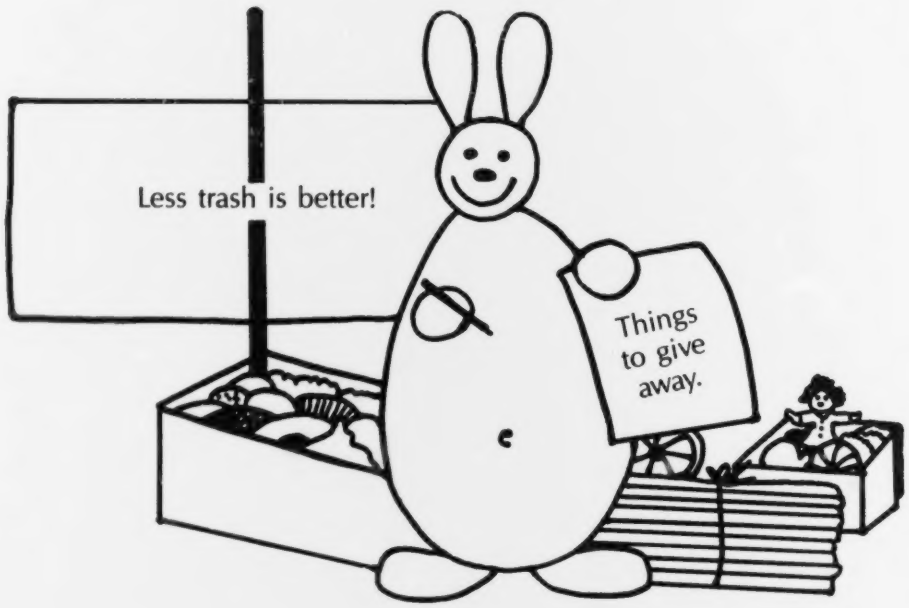
When you are at the store, try not to let anyone give you bags that you do not need.

Reuse any bags that you did need.

I bring my own shopping bag. Colour it.

ALSO, BE SURE NOT TO WASTE PAPER AND PENCILS AT SCHOOL.

I give away things that I no longer need. I give them to people who do need them. Then I make less trash.



I save my old toys, clothes and magazines. I give them to people who enjoy them.

Circle the names of some places in Bermuda that might want old magazines.

schools	friends' homes
churches	old people's homes
hospitals	barbershops or hairdressers

doctors' and dentists' offices
children's homes

Write the names of other people or places that could use the things you don't want anymore. _____

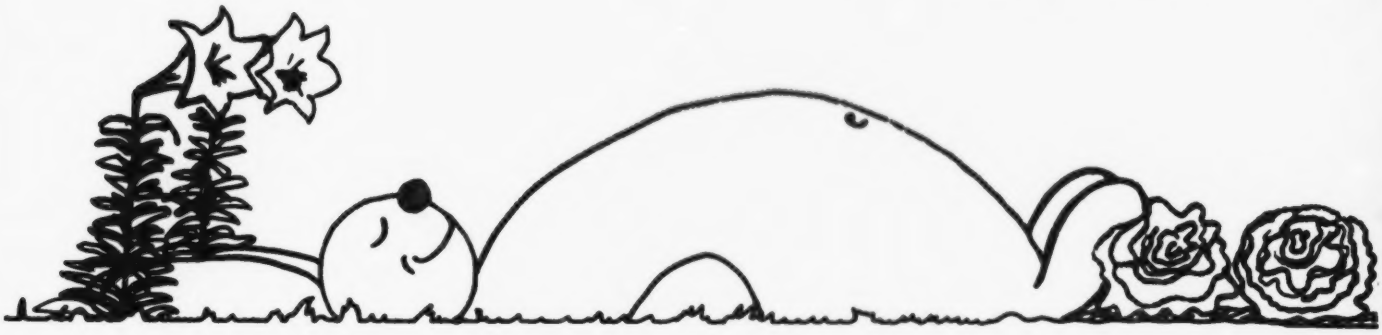
_____

Composting

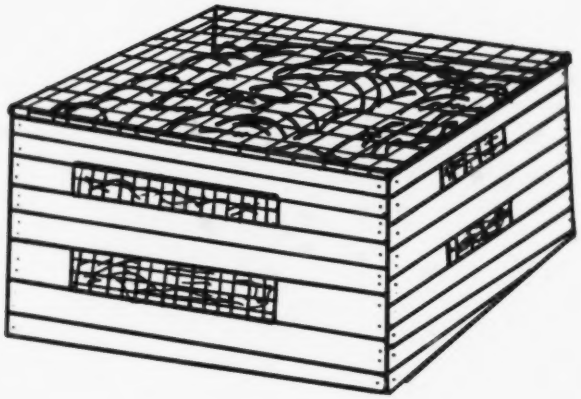
Even vegetable garbage can be used again. Mix vegetable garbage with cut grass, leaves and soil in a very large wooden box. (See the picture below.)

Add **manure** if you can get it. Water the pile if it gets too dry. Now you have made a **compost** pile.

Compost helps to loosen the soil in your garden. Then it is easier for plants to push through the ground. Compost helps the soil to hold water. Plants also grow better because the compost has plant food in it.



I put compost around my flowers and vegetables. They are saying, "Jelly Jam, I love you!" Draw some red hearts around me.



Here is a picture of a well-mixed compost pile.

What colour should the compost be? Circle the right answer.

brown yellow green red

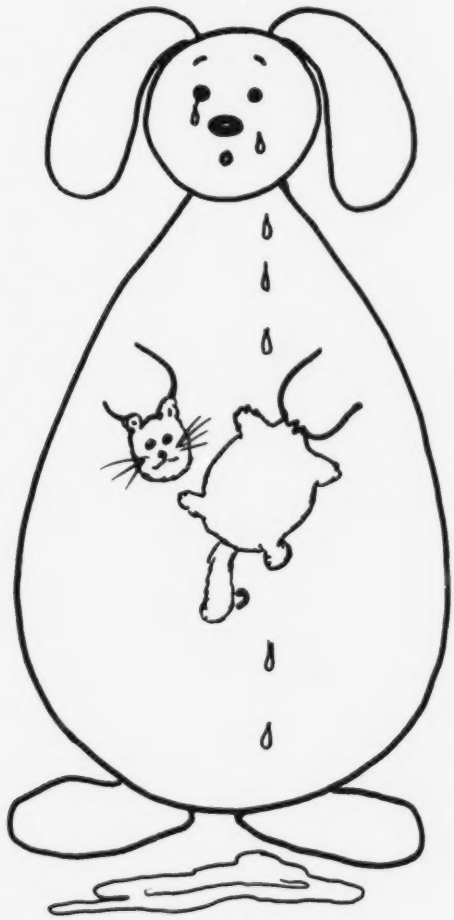
Colour the compost.

Buying Carefully

Most of all, try to stop making so much trash.

Before you buy anything, try to find out if it is well-made. Well-made things may cost more money, but they will not break as easily. They will not become trash as soon.

Try to buy things that are easy to fix, too.



My toy broke. It was new but not well-made. It cannot be fixed. Now it is trash.

I should have saved my money and bought a better toy.

Colour me sad.

Some toy **materials** last longer than others. **Metal** is the strongest material and will last the longest.

Number the following things in order of how long they will last indoors. Number 1 has been done for you.

_____ paper
__1__ metal
_____ light plastic
_____ hard wood
_____ cardboard

Of course, toys will last longer if they are taken care of. Bringing toys inside will keep them from rusting.

Do you have a special toy that you like very much? _____
What is it? _____

How do you take care of it so it will last a long time? _____
_____
_____

Buying Less

Another way to stop making so much trash is to buy fewer things. Having too many things can make people very unhappy.

This is the beginning of a story about two families ....

Once upon a time there were two families who lived in Bermuda. Both families had enough money to be very comfortable. However, they chose to spend their money in different ways. One family chose to live in a small and pretty house. There were pretty trees, plants and a beautiful garden in the yard. Because the people were gentle and quiet, birds and animals lived on their land.

This family owned only what it needed and did not eat more food than it needed. The children did not have lots of toys, but their parents taught them how to make toys and play games. Because the parents were not interested in owning lots of things, they had more time to spend with their children. The family went to the beach, the pond, the Aquarium and the library. Sometimes a few friends came over. Everyone talked, played games and told funny stories.

The family had a lot of fun together. There was also time to take care of any problems that came between the children or the parents. There was time to talk gently and to help one another.

The other family chose to live in a big, big house. This family had a swimming pool, five motor bikes, lots and lots of furniture, four television sets, a big motorboat and many clothes. Everyone ate too much food. The house was so big that they sometimes never even saw each other. They were so busy playing with everything that they owned that they did not talk to each other very much.

The television sets and the **stereos** made a lot of noise. Many people came to swim in the pool and made more noise. The parents and the children did not get enough sleep. They began to fight with each other.

The family also spent lots of time looking for things. The car, motor bikes, television sets, toys and dishwasher broke. The parents spent time having things fixed and had to pay lots of money. The big, big house and the swimming pool became dirty. There was just too much to do. The family began to speak badly to each other. There was more fighting.

Make up a name for this story. Write it here.

_____

In which family do you think the children were happier?
_____ Why?_____
_____

What do you think happened to the two families?

_____
_____

Make up a happy ending on another piece of paper. Add the following idea in the box to your ending if you wish:

> Of course, it is not always true that people are unhappy who live in big, big houses and own lots of things. People who live in small houses are not always happy, either.
>
> However, it is true that Bermuda and much of the rest of the world would be a happier place in which to live if people cared more about each other and cared less about having so many things.

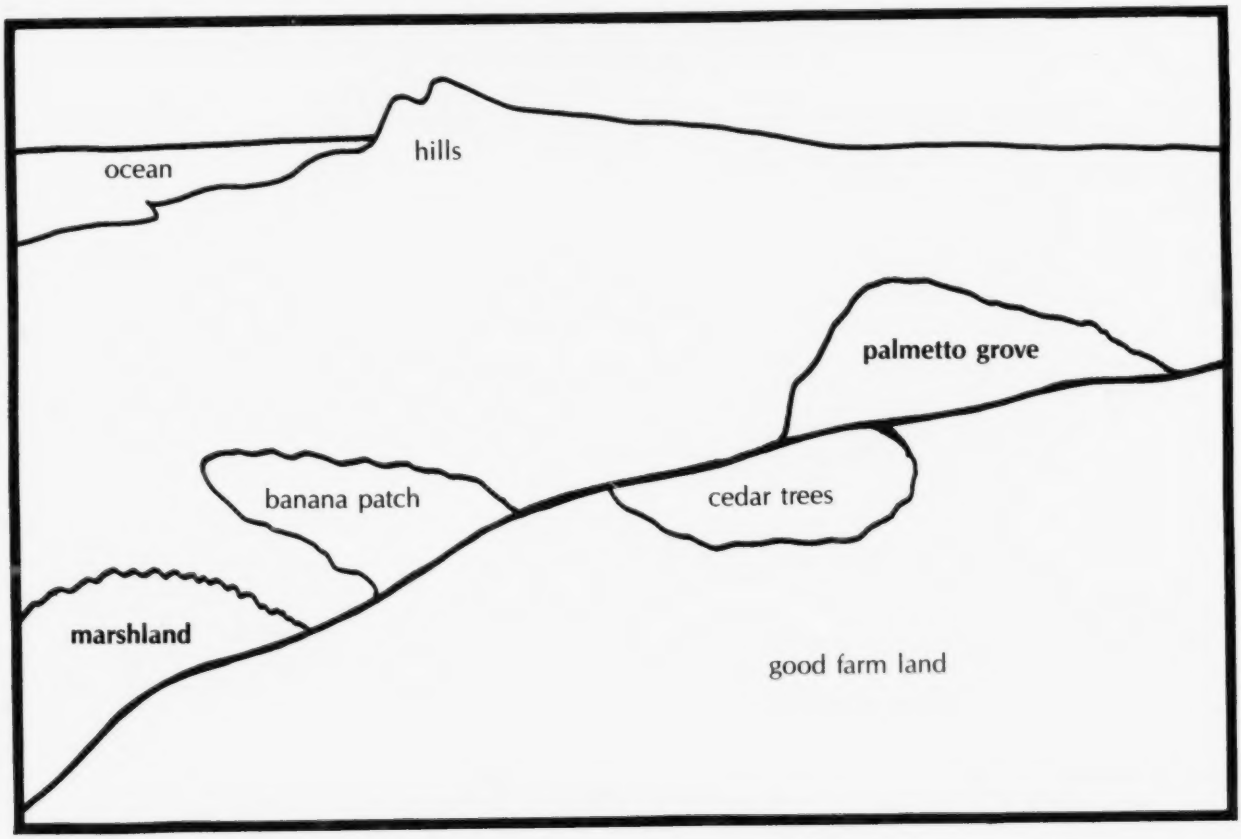
Now see if you can make your finished story into a play. Name the people and make them talk.

LAND: USING IT CAREFULLY

Bermuda has very little land. More and more people want to build homes here. We must use the land carefully.

Some land is good for homes. Other kinds of land are good for farms, parks, birds and animals.

Use this map. Show how to use land carefully. Draw some houses close together. Do not hurt the land by putting houses all over the map. Leave a lot of land for a park that everyone can enjoy. Show a big farm in a place where there is good soil. Draw as few roads as possible.



Write a class letter to one of Bermuda's newspapers. Ask people to help save some of our beautiful land.

Saving Special Places

There are interesting and beautiful places all over Bermuda. Many of them have been here for a long, long time.

Do you have a special park that you like best? Write its name here. _____

Do you have a special hill from where you can see pretty things? Where is it? _____

Do you have a special beach that you enjoy? Write its name here. _____

Do you have a special place to play where there are many wild trees, birds and animals? Where is it? _____

Draw one of your special places.

Do you know a special place that has been hurt by something that people have done? _____ If you said yes, what happened? _____

What can you do to keep one very special place beautiful? _____

Part Three: WATER POLLUTION

SOME EXAMPLES

Fresh Water

I am also worried about water pollution in Bermuda.

I love rain. Rain can give us clean drinking water. It also helps our plants to grow big and strong.

Draw raindrops falling on me and on my favourite hibiscus bushes. Show rain falling on my roof. Make it run inside the pipe into the tank under my house.

Sometimes the rainwater is not as clean as it could be. Man-made **chemicals** get into the air and mix with the rainwater, making acid rain. There are chemicals in the paints that are used on our roofs.

Bird droppings and leaves on the roof can get into our drinking water.

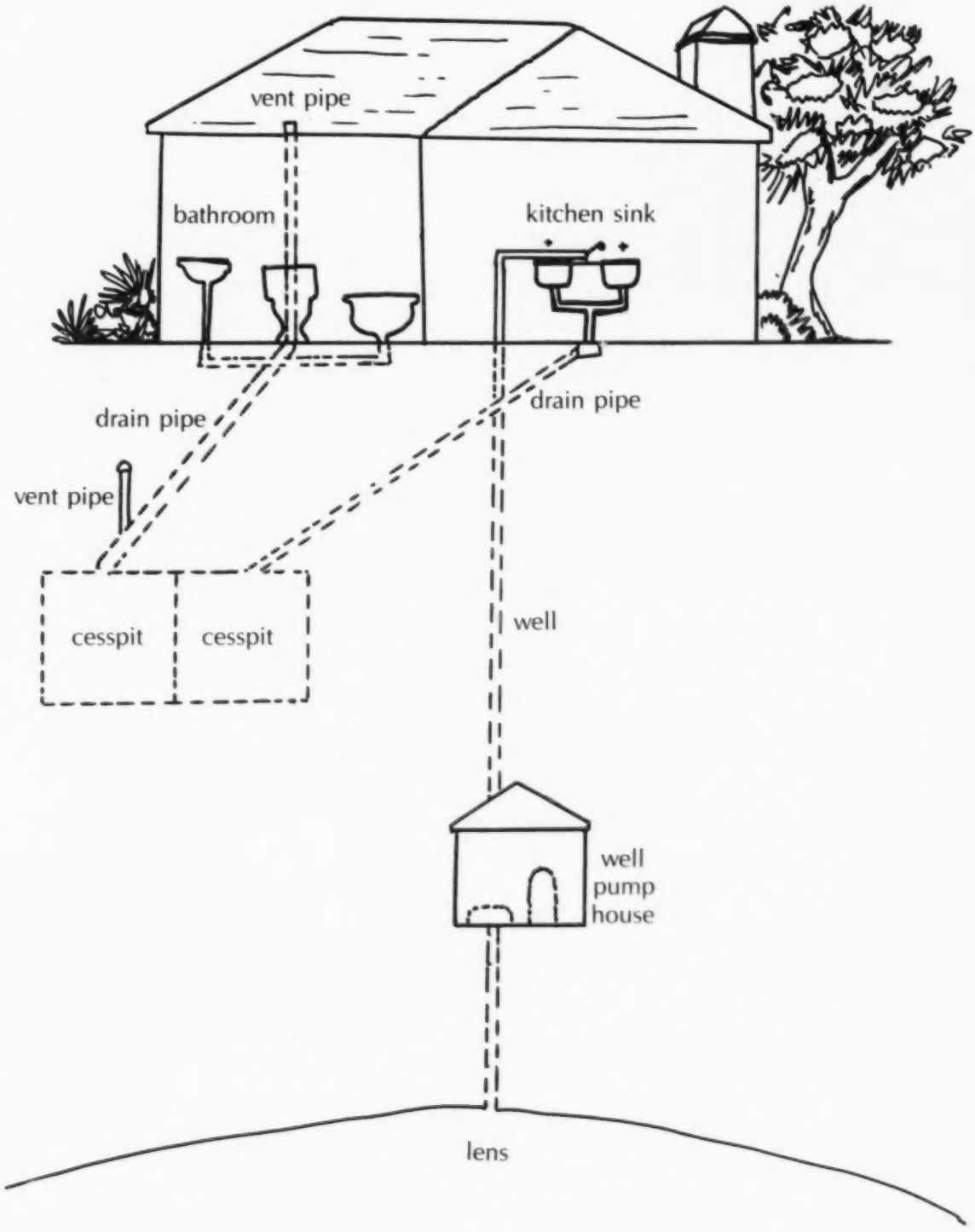
Too many chemicals and too much dirt in drinking water can make people sick.

water tank

I drank some polluted water.

Draw me looking sick.

This is a home in Bermuda. The dotted lines show pipes that are underground or behind walls.



25

Clean water can also be found in an underground lake called a water **lens**. This water has been clean for many, many years.

Using blue, colour the lens and the water in the well on page 22.

Now some of this groundwater is not as clean as it used to be.

People are putting chemicals down their **drains**. Then the chemicals go down into an underground pipe and into a **cesspit**.

Draw brown lines showing chemicals going down the sink and toilet drains, into the pipes and then into the cesspit.

Sometimes the chemicals slowly come out of the cesspit. They go through the ground and may get into the lens.

Using a brown dotted line, show a few chemicals coming out all around the cesspit. Show some of them going into the lens.

Because the well goes into the lens, the chemicals may mix with the water in the well.

Show some of the chemicals mixing with the water in the lens. Colour brown over some of the blue lens water. Draw brown lines going from the lens up through the well and into the sinks.

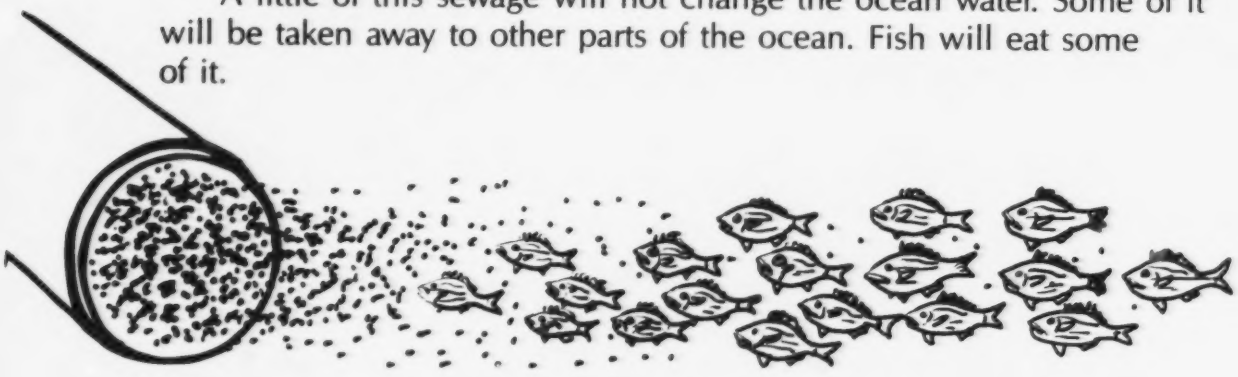
TOO MANY CHEMICALS FROM TOO MANY BUILDINGS FOR TOO MANY YEARS MAY MAKE THE WATER IN THE LENS UNSAFE.

Salt Water

Sewage is what goes down the drains of your sink, tub and toilet.

A lot of sewage goes down many drains all over Bermuda every day. Some sewage goes through pipes right into the ocean. It may also go through the **limestone** in the ground. Then it will slowly end up in the ocean.

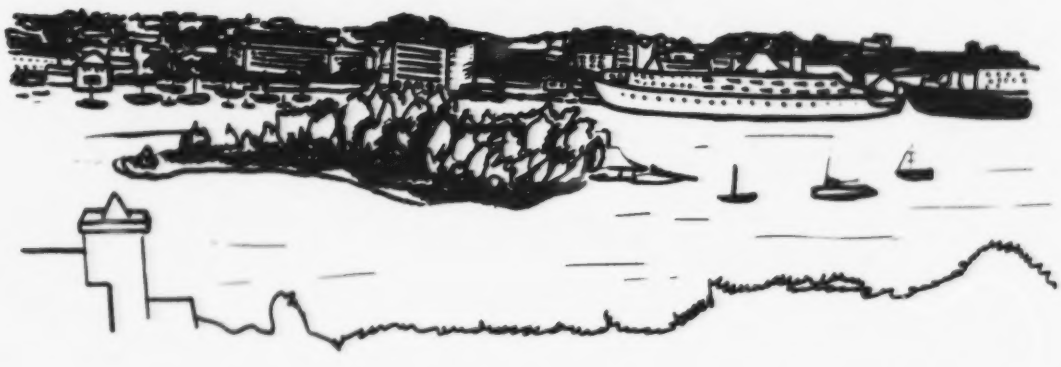
A little of this sewage will not change the ocean water. Some of it will be taken away to other parts of the ocean. Fish will eat some of it.



However, if there is too much sewage in some places, it will not go away. It will help to feed tiny plants called **algae**. If there are too many algae, the ocean changes.

As these tiny plants die, they use up **oxygen**. Then there may not be enough oxygen left for the fish and **coral**. They would die, too.

Here is Hamilton Harbour. Too much sewage is in the water. Colour the water pea green to show the algae in it.



Try to use less soap and cleaners. Use safe cleaners like baking soda. Ask your parents to buy cleaners that do not have **phosphate** in them. Phosphates help to make algae grow.

SOME ANSWERS
Saving Water

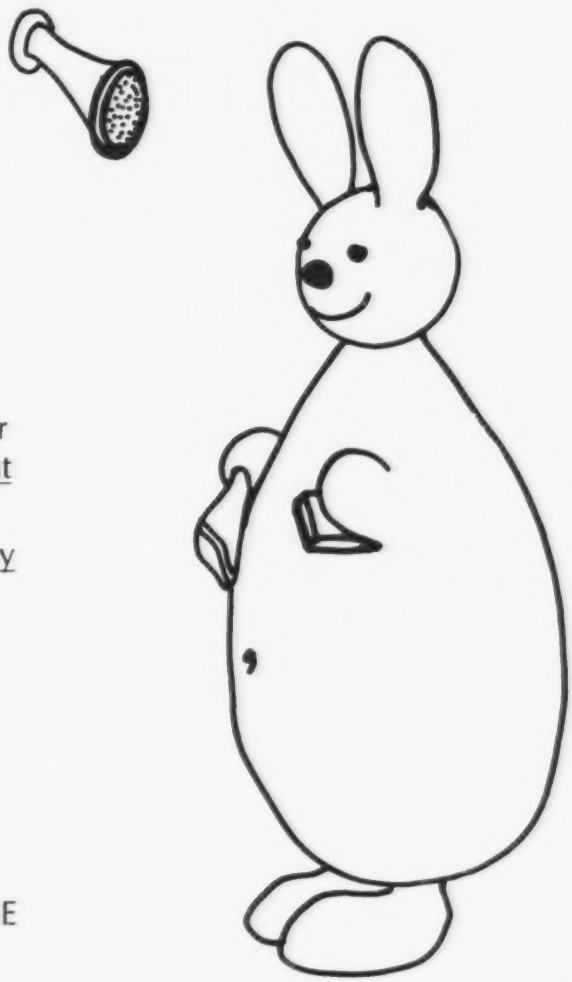
Drinking water can also be made from sea water by using machines that burn oil. Getting water in this way uses up oil and costs a lot of money.

You can help to keep water clean.

One way is to store it in the ground or in the tank by not using too much.

Try not to let water run any more than you have to.

Take short **showers**.



I am singing my short-shower song. Show the water coming out of the shower head. Draw some notes (♪♪♪) near my mouth. Try writing a short-shower song.

YOU CAN SAVE A LOT OF WATER EACH DAY AND STILL BE JUST AS CLEAN.

EXPERIMENT: SAVING WATER

FIRST DAY

On the first day, close the drain in your bathtub if you have one. Put water in the tub for your bath. Use a piece of **masking tape** to show how much water is in the tub.

SECOND DAY

On the second day, close the drain again. Now take a quick shower. Look at the water that is left in the tub this time.

On which day did you use less water? _____

PROBLEM

Flushing the toilet uses a lot of water.

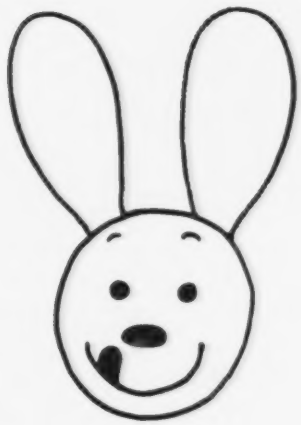
It takes about 20 litres of water to flush the toilet once.

How much water would be used if one person in a family flushed the toilet 5 times?

_____ litres × _____ number of flushes = _____ litres

How much water would be used if each of 4 people in a family flushed the toilet 5 times?

_____ litres for one person × _____ number of people = _____ litres



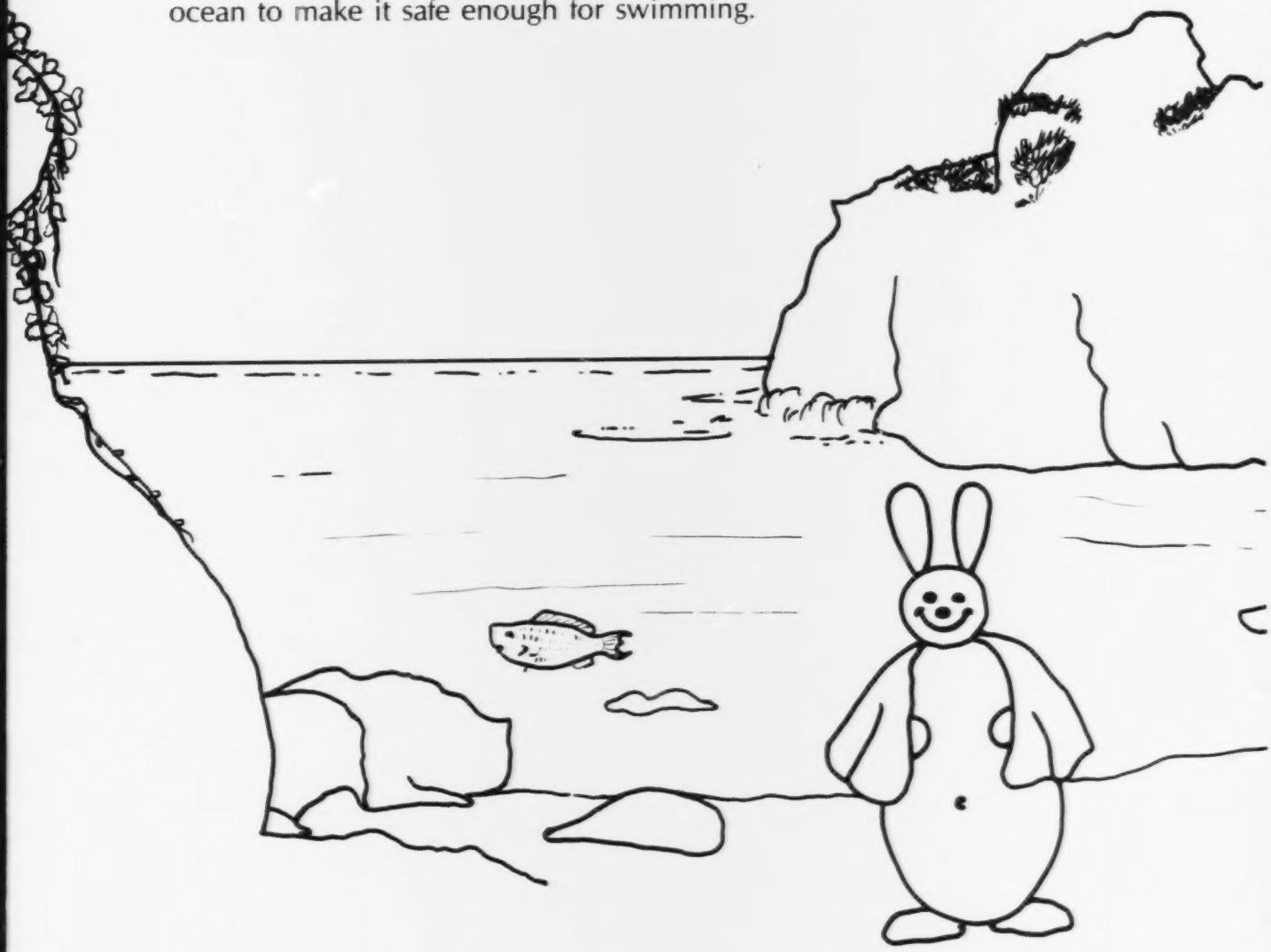
DON'T STOP DRINKING LOTS OF WATER. CLEAN WATER IS VERY GOOD FOR YOU!

29

Swimming pools use up fresh water. They also use up the land.

Chemicals are put into the pools.

I like to go to the beach. There is lots of room to run around and to swim in the big ocean. No chemicals need to be put into the ocean to make it safe enough for swimming.

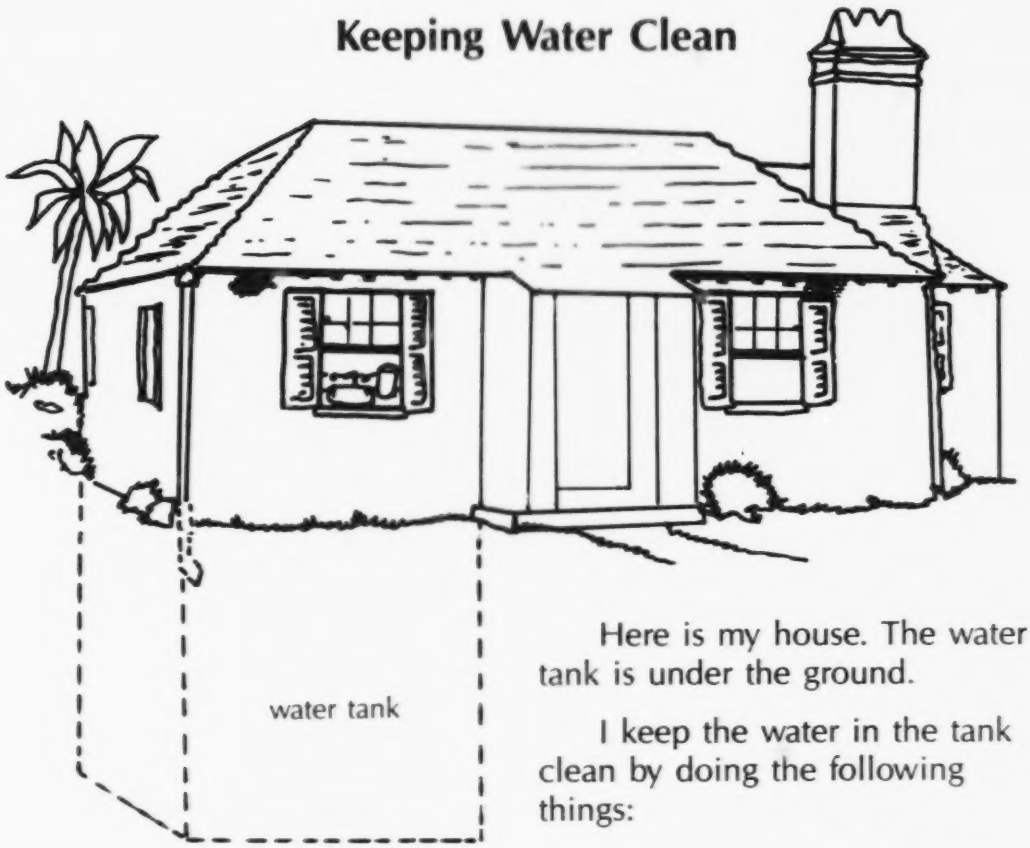


I have just been swimming in the beautiful blue ocean.

Colour the blue parrotfish in the water. Draw a longtail in the sky behind me. Show a Sally lightfoot (crab) on the rocks.

Add other Bermuda ocean and shoreline animals if you want to.

Keeping Water Clean



Here is my house. The water tank is under the ground.

I keep the water in the tank clean by doing the following things:

1. I put a **pineapple strainer** in the opening of the drain pipe. Then leaves will not get into the water tank. Draw a circle around the strainer at the top of the drain pipe.
2. I keep birds from nesting on or near the roof. Close up the hole under the roof by putting a black **X** on it. Finish drawing wire screening to keep the birds away. (I do these things in the winter when the birds are not nesting.)
3. Put a brown **X** on the chemical cleaner next to the sink.
4. Colour the clean water in my tank blue.
5. Colour the roof white. It has just been cleaned and painted.
6. Write a class letter to the Bermuda Biological Station in Ferry Reach. Ask them what you can do to stop chemicals from getting into the rain.

Stopping Litter

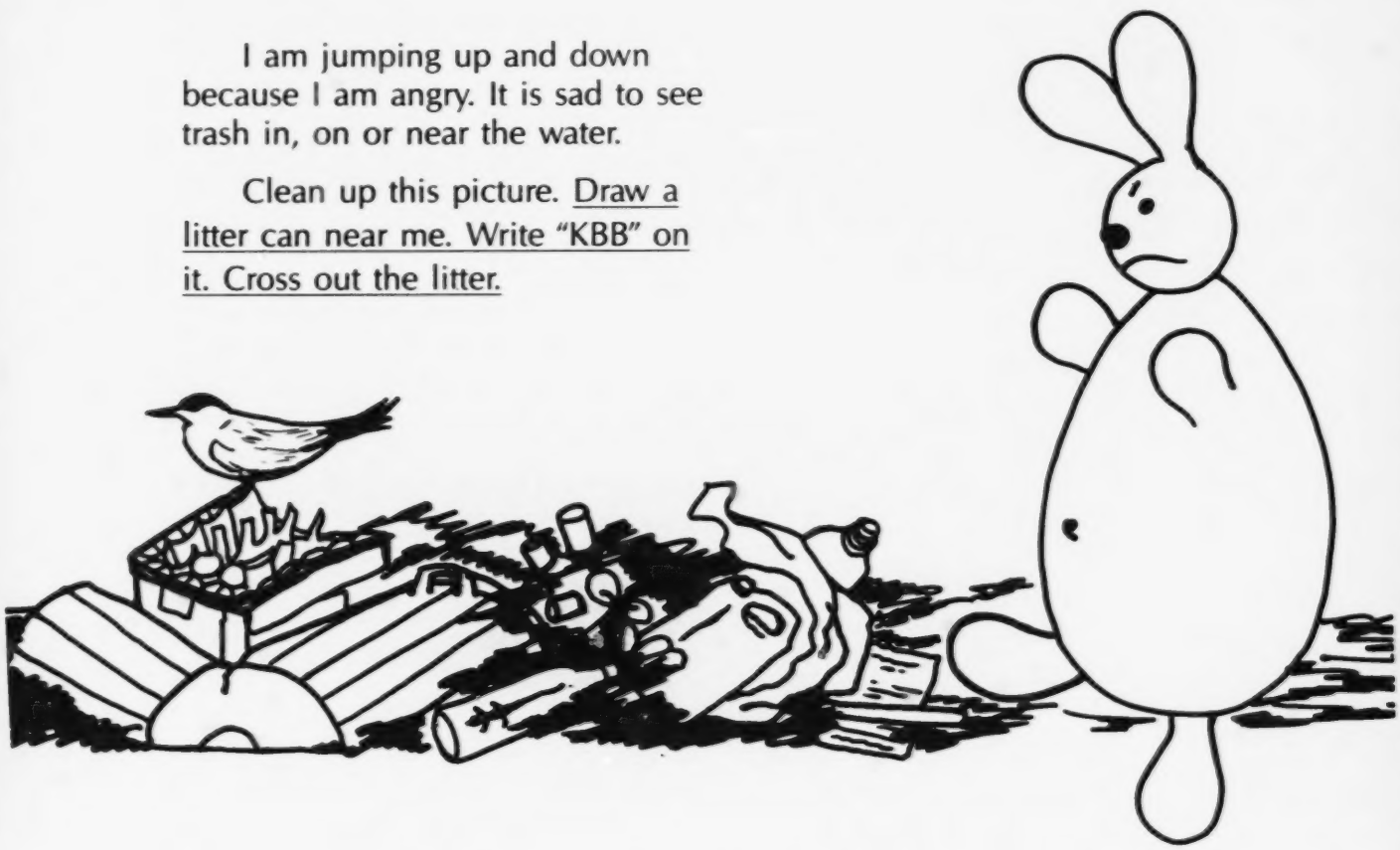
When you are at a beach, pond or marsh or on the ocean, don't put the wrong things in the water.

Some things may sink. People and animals will not know what is in the water. They might get hurt.

Many things will end up on the shore. Then our Island will not be beautiful anymore.

I am jumping up and down because I am angry. It is sad to see trash in, on or near the water.

Clean up this picture. Draw a litter can near me. Write "KBB" on it. Cross out the litter.



Circle the things that do not belong in the water.

plastic cups	pop tops from cans
fish	seaweed
cans	boxes
paper	napkins
broken fishing poles	plastic coolers
plastic bags	bottles

WATER RIDDLES

Which words are the best answers to the riddles below? Write the words on the lines.

cesspit	pond	salt
ocean	clean water	clam
chemicals	lens	swimming pool

1. I am wet. All living things need me. All plants, animals and people will die without me. What am I? _____

2. I have been under the ground for many, many years. Water for the people of Bermuda is in me. What am I? _____

3. I am sick. Too much sewage has come into the water where I live. What am I? _____

4. I am near everyone's home. Food, water and chemicals are put into me. I am not very big, but I am supposed to do a big job. What am I? _____

5. People like to swim in me. Big boats sail on me, too. I am very pretty. What am I? _____

6. Wild water birds like to be on me. I am very beautiful. You can walk around me and see many exciting birds, animals and plants. What am I? _____

Part Four: AIR POLLUTION
SOME EXAMPLES

Another kind of pollution is air pollution. When there are too many harmful things in the air, it is polluted.

People and animals need to take in clean air with plenty of oxygen in it. Oxygen is added to the air by plants.

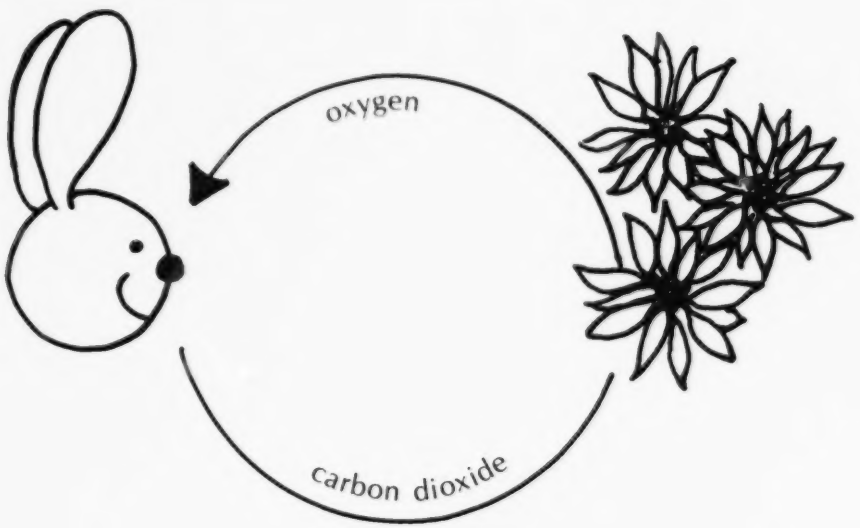
1. What would happen to all the animals and people if there were not enough trees, bushes or grass?

_____

_____

The arrow in the drawing below shows a plant giving off oxygen. I am taking air filled with oxygen into my nose and mouth.

People and animals give out **carbon dioxide** into the air. Plants take in the carbon dioxide.



2. Make the bottom line into an arrow. Show me giving off carbon dioxide and the plant taking it in.

3. What is the name of the flower? _____

4. Colour it. I love plants! They help to keep the air clean.

SOME ANSWERS
Stopping Smoking

Air pollution can hurt our **lungs**. People may get sick from taking in too much air pollution.

Some people pollute the air inside their own bodies by smoking. Their smoking also pollutes the air outside of their bodies.

People can get sick when there is too much smoke in the air.

Here I am asking someone not to smoke near me. I don't want polluted air in my body. I try to be very nice when I ask.

Finish drawing my face and ears.
Write the word "Please" on the line in the above picture.

Making Less Noise

Noise pollution is another kind of air pollution.

The sounds from cars, motorbikes, trucks, boats, barking dogs, radios, T.V. sets and stereos are some examples of noise pollution. They can make people feel unhappy.

Loud noises can hurt people's hearing. Too many very loud sounds can even make people sick.

My neighbour's music is too loud. I cannot get to sleep at night. I cannot even hear the wonderful tree frog noises.

Draw me in the box. Make me look upset. Draw me covering up my ears.

I am going to ask my neighbor to turn down the music.

Part Five: LAND, WATER AND AIR POLLUTION

SOME EXAMPLES

Bug Sprays

In Bermuda the wind blows a lot of the air pollution out to sea. The rain also helps to clean the air.

It has just rained. The air is cleaner. Draw my happy face.

But sometimes the pollution does not go away. The rain water mixes with the gases in the air. Then the air pollution also becomes land and water pollution.

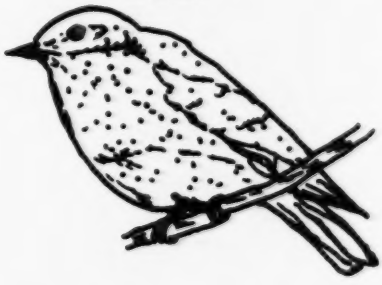
Many people use **sprays** to kill bugs. Too many sprays can pollute the air inside or outside. They also pollute the land. When it rains, the sprays mix with rain water.

Too much of these sprays can kill birds and other animals. They can make people sick if they get into their food or drinking water.

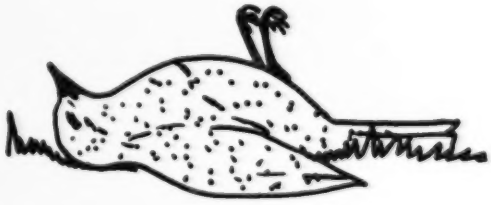
Look at the pictures below. Find the little dots in each picture. The dots are the **poisons** in the sprays. Make the dots brown in each picture. Colour the bluebirds.

1. Bugs are killed by spray.

2. Bluebirds eat these bugs. Now the spray is in the birds.



3. Many young bluebirds die from eating the poisoned bugs.



37

Oil and Gasoline

The air, water and land can also be polluted when oil and **gasoline** are burned. Burning makes tiny pieces of harmful things go into the air. These pieces fall on the land and the water.

EXPERIMENT

1. Ask your parent or teacher to help you light a candle.
2. Hold a plate over the top of the flame.
3. Take the plate away after a few seconds. Look under it.
4. What do you see on the bottom of the plate?

_____

We take these tiny pieces of harmful things into our bodies through our noses and mouths. Too much of this kind of pollution can make us sick.

Do we have this kind of pollution in Hamilton? Find out by doing the following experiment.

EXPERIMENT

1. Put some **Vaseline** on a white card.
2. Leave the card outside in Hamilton in a place where nothing will move it.
3. After two days look at the card through a **magnifying** glass.
4. Do you see tiny pieces on the card?
   _____ Yes _____ No
5. If you see any pieces, ask your teacher or parent about them. Try to find out where they came from.

In Bermuda we burn oil to make **electricity**. This electricity runs motors that can heat, cool and light our homes. Electricity also makes our T.V. sets work.

The burning of oil makes smoke that has **sulphur dioxide** in it. Too much sulphur dioxide can make people sick.

EXPERIMENT

1. Ask your teacher or parent to light a match.
2. Blow it out.
3. Smell it.
4. The gas that you smell is sulphur dioxide.

Because there is no oil in Bermuda, we get it from other places. Big ships carry a lot of oil to Bermuda. The oil sometimes leaks out of the ships into the water. Some ships clean their tanks in the ocean near Bermuda even though this cleaning is against the law.

Ships can hit reefs and sink. If that happened near our Island, oil and **tar** would cover the beaches and rocks. Many animals, birds, plants and shells would die.

Draw tar on my feet.

Draw a tar ball.

Write a class letter to the:
Intergovernmental Maritime Organization
4 Albert Embankment
London SE 1, 7-S-4 England.

Ask them if they can help stop having oil tanks cleaned at sea. Also ask them to make laws so ships pass as far away from Bermuda as possible.

39

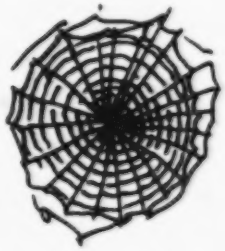
SOME ANSWERS
Using Less Sprays

You can do many things to help stop the pollution of beautiful Bermuda. Here are some more thoughts.

Help to stop bug problems without using any bug sprays.

Draw a line from the problem on the left side of the page to the answer on the right side.

ants in honey that fell on the floor



spider webs in the house

cockroach

bugs that eat vegetables in the garden

fly

more cockroaches

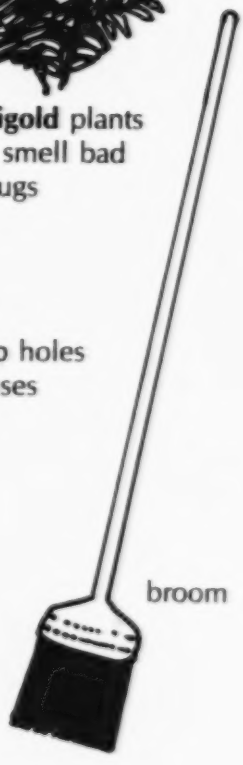
giant crab spider

swatter

marigold plants that smell bad to bugs

something to close up holes and cracks in houses

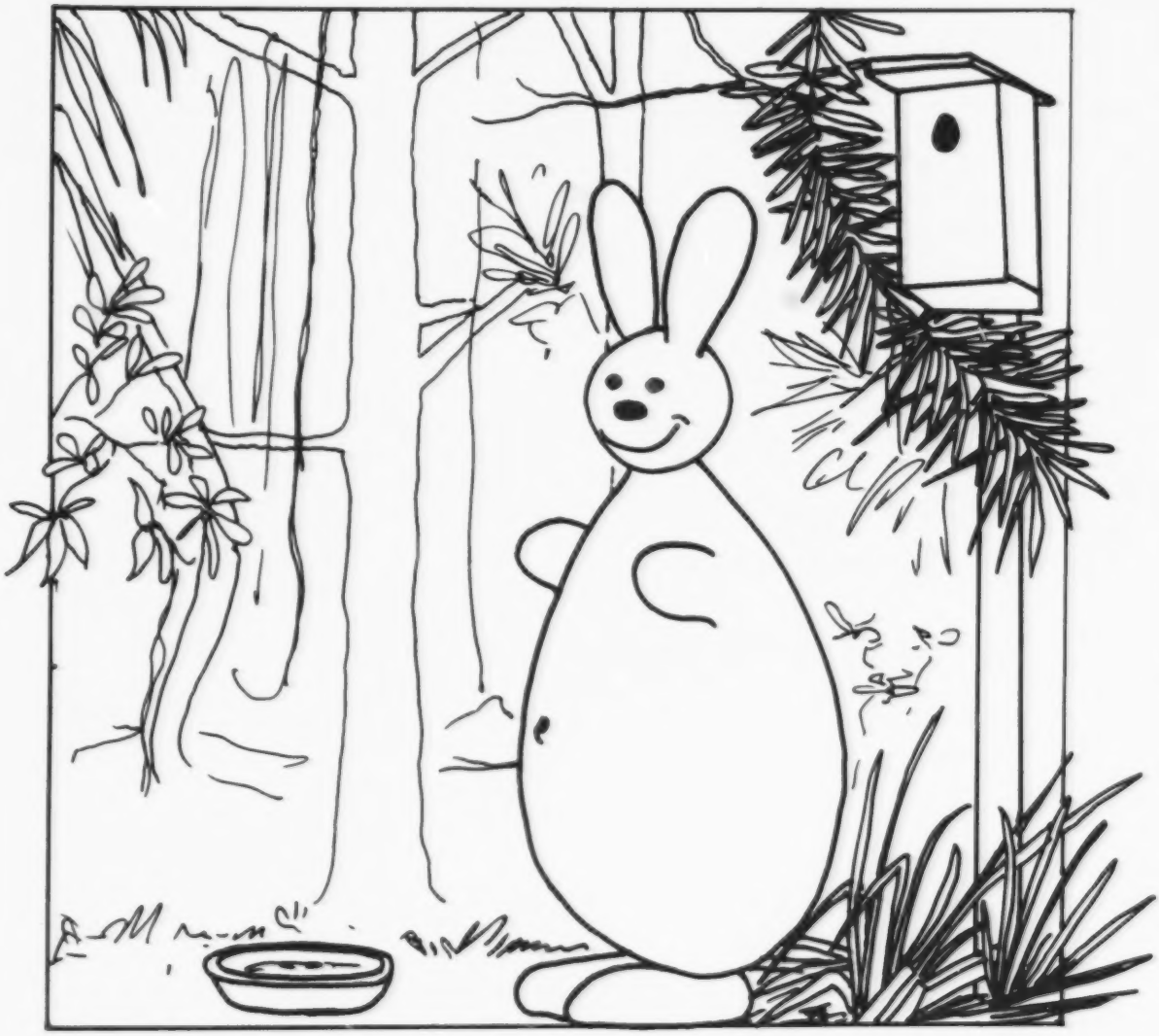
wet rag



broom

Instead of using sprays, make your yard and garden a nice place for birds, lizards, whistling frogs, toads and spiders. They eat hundreds of bugs every day.

Give homes and water to these friends. They like a yard or an empty lot that has trees, bushes, vines and places where the grass grows tall. They love wet places and woodlands.



Draw some Bermudian birds and animals that eat bugs. They are not afraid because I am gentle and quiet.

41

Using Less Gasoline

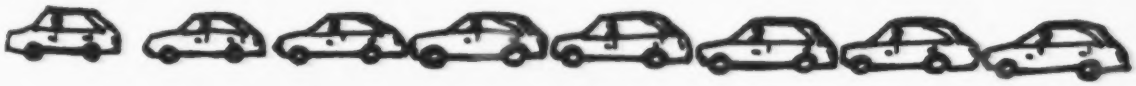
Burning oil and gasoline in motors sends many harmful things into the air, water and land. Sometimes we cannot see this kind of pollution.

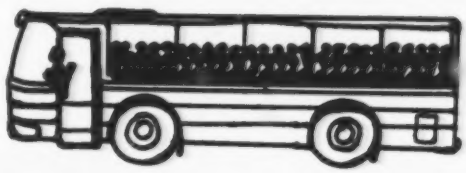
There would be less pollution if people would walk or use push bikes. It is important to use fewer cars and more buses, ferry boats and motor bikes.

Here are some different ways that eight people could get to work. (Hint: the bus is filled with people.)

☐

☐

☐ 

☐ 

☐

☐

Put a 6 in the box beside the most polluting way.
Put a 5 beside the way that is less polluting.
Put a 4 beside the way that is even less polluting.
Put a 3 beside the way that is even less polluting than 4.
Put a 2 beside the way that is even less polluting than 3.
Put a 1 beside the least polluting kind of travel.

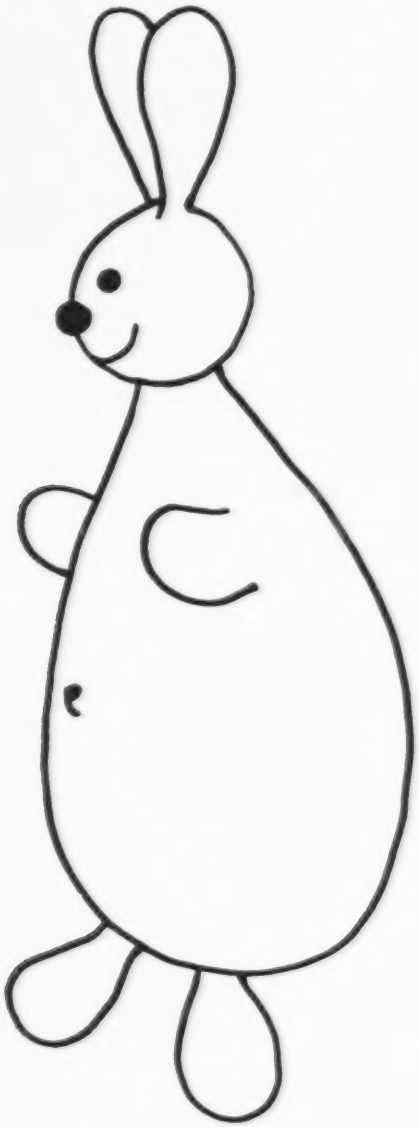
Colour the bus pink. Show two blue lines on it.

Help to stop the pollution of Bermuda by using less oil and gasoline.

Walk or ride a push bike instead of going in cars or on motor bikes. Walking or riding is better for you. It makes less noise, too.

I feel good when I get a lot of **exercise**.

Colour my cheeks.



Walking keeps me fit, not fat!

I am very careful when I am walking or riding on busy roads. Cars can be dangerous.

Colour the edges of the sign red. If your road is very busy, see if you can get this sign put up.

Using Less Oil

BELCo burns oil to make electricity. If you use less electricity, there will be less pollution in the air and water and on the land.

Finish the sentences below by writing the correct letter in each space. Number 1 is done for you.

1. Turn off electric lights that are not being used __C__
2. Turn off the TV when no one is watching it _____
3. Keep outside doors closed in cold weather _____
4. Don't use any more hot water than you need _____
5. Use a clothes line to dry your clothes _____
6. Don't keep the **refrigerator** door open _____

a. so that the heat in your house is not lost.

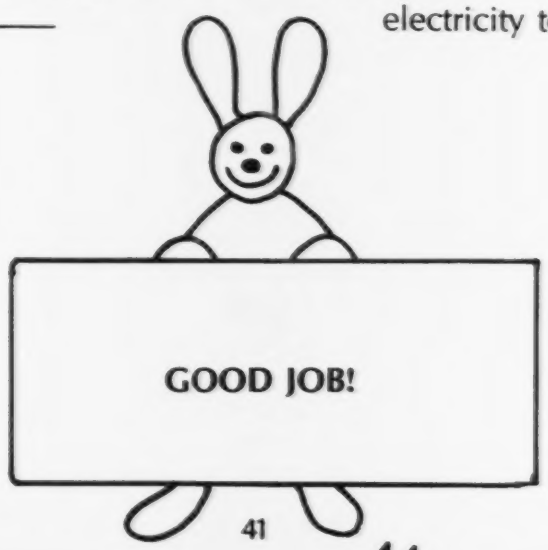
b. because sunshine does not make pollution.

c. because oil is being burned to make the electricity that lights the lamps.

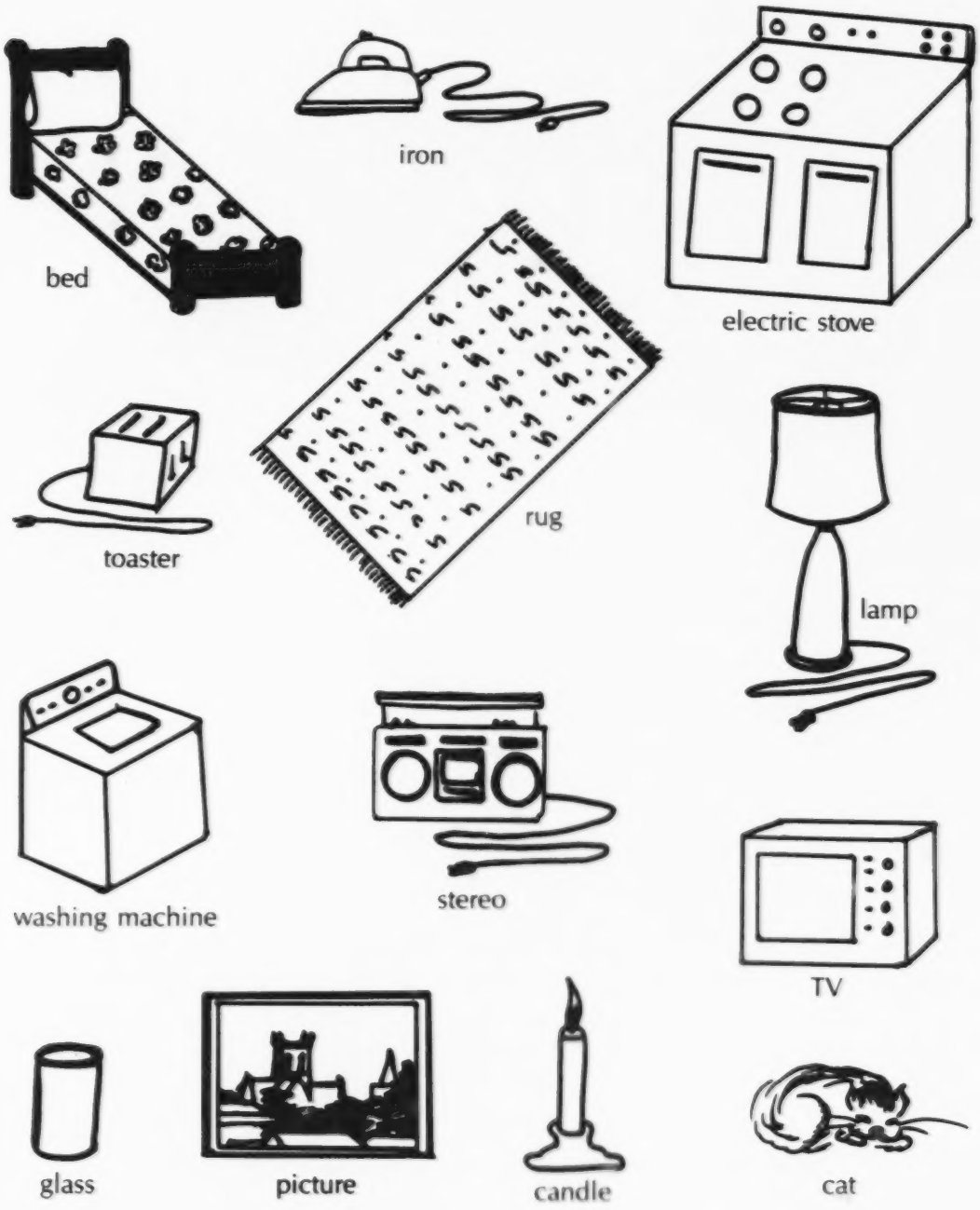
d. because oil is being burned to make electricity to run the TV.

e. because cooling air uses a lot of electricity.

f. because it takes a lot of electricity to heat water.



Put a blue circle around anything that uses electricity in the home.



Now put a red **X** on anything that should be turned off whenever it is not being used.

Using Even Less Oil

Here is another way to help stop pollution. Don't turn up the electric heat.

Put a red **X** on the heater.

When I am cold, I do not turn up the heat right away.

First, I go to a room on the sunny side of the house. I open the shutters and the curtains. The heat from the sun helps to warm my home.

I also put on my sweater.

I am wearing a dark sweater. Colour it.

Do the following experiment to find out why I am wearing a dark sweater and sitting near a sunny window.

EXPERIMENT

1. Wet a piece of black paper and a piece of white paper.
2. Put them on a plate near a sunny window.
3. Feel the papers after twenty minutes.

Which paper is warmer? Black?_____ White?_____

When the weather is hot, we need to think of ways to keep cool.

Bermuda homes have white roofs. Why does that help to keep our homes cooler? _____

_____

I wear a light-coloured sun hat. Draw it. (Be sure to leave holes for my ears.)

When it is hot, I do not use an **air conditioner**. It uses a lot of electricity. Closing the shutters and curtains in sunny rooms helps to cool my home in the summer.

I move around more slowly and drink lots of water. My hardest work is done in the cooler morning and evening hours.

I love trees. I planted a **poinciana** tree in my yard. It is not near my water tank or my house.

When it is cold outside, the tree has no leaves. Now sunlight can easily get through to warm my home. In summer the leaves give me shade.

Here I am hugging my helpful tree.

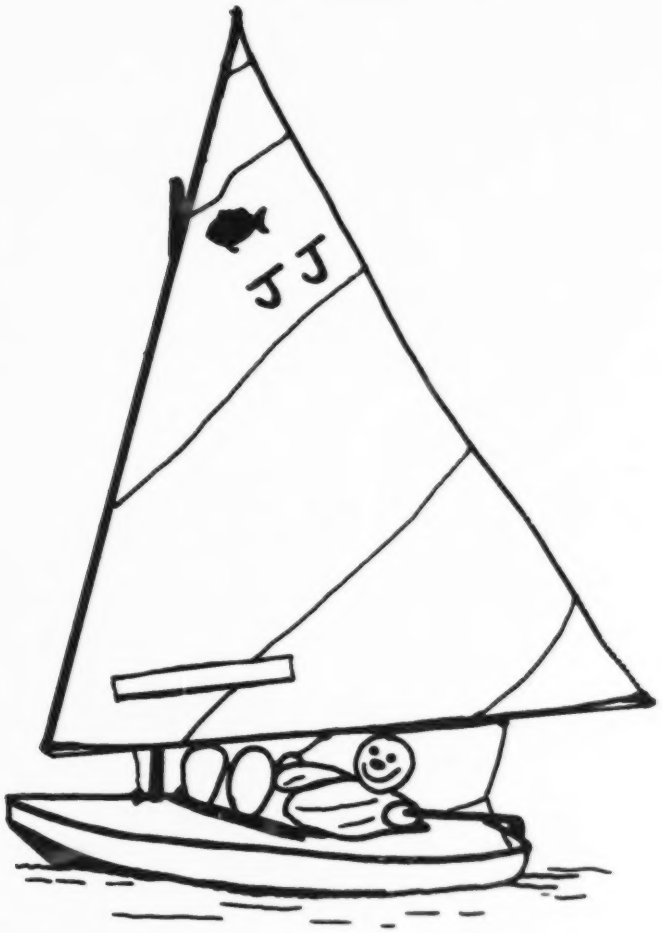
Draw some of its leaves at the top of the page.

Colour them.

MORE ANSWERS
Learning About Wind

Wheeee! Sailing is fun. The strong Bermuda wind pushes the sailboat. It does not need oil, gas or a motor. No pollution goes into the water or the air, and none goes onto the beach.

Sailing a small sailboat doesn't cost anything. The wind is free.



Here I am in my sailboat. It moves so quietly. Now I can hear the sea birds and the passing waves.

The wind is strong today. Draw my ears flying out behind me. Colour my life jacket.

What else can wind move? _____

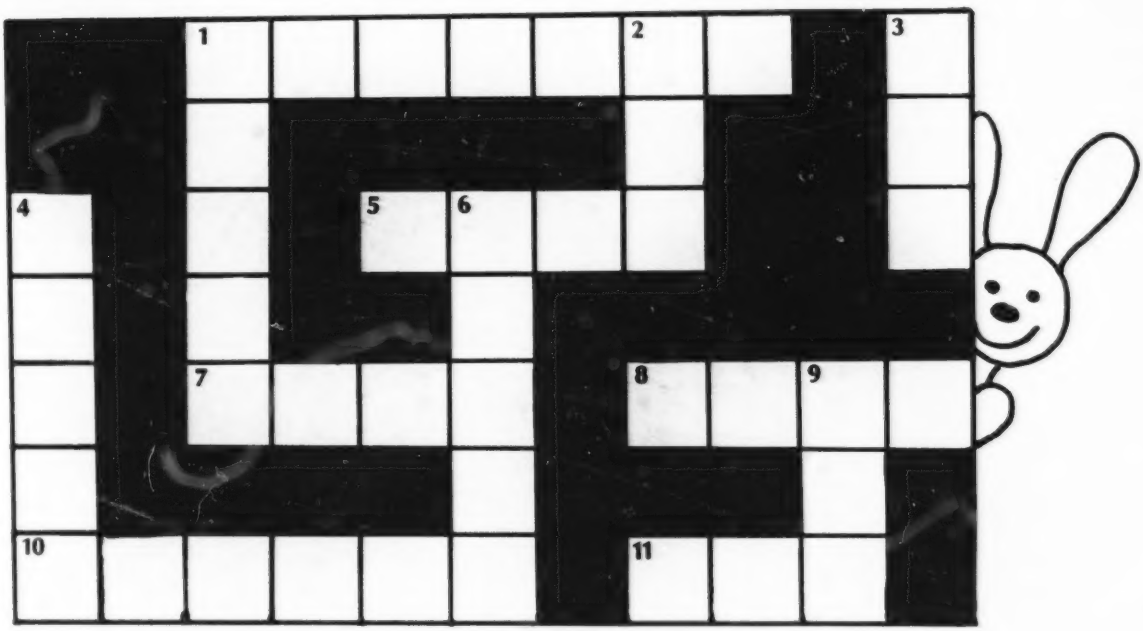
_____

_____

POLLUTION PUZZLE

Do the puzzle using some of the words below. Use the sentences on page 47 to help you.

afraid	fish	sad
birds	home	shade
burning	likes	sick
cars	mad	slow
cat	noises	spray
clean	now	television
danger	pollution	you



ACROSS

1. _____ oil and coal makes the air dirty.

5. Jelly Jam says, "Walking may be _____, but it makes me feel good."

7. If people smell too much burning plastic, they can get _____.

8. The sun can warm your _____.

10. Too many loud _____ can hurt people's hearing.

11. Turn off the lights that you are not using, or Jelly Jam will feel _____.

DOWN

1. Millions of bugs are eaten every day by _____.

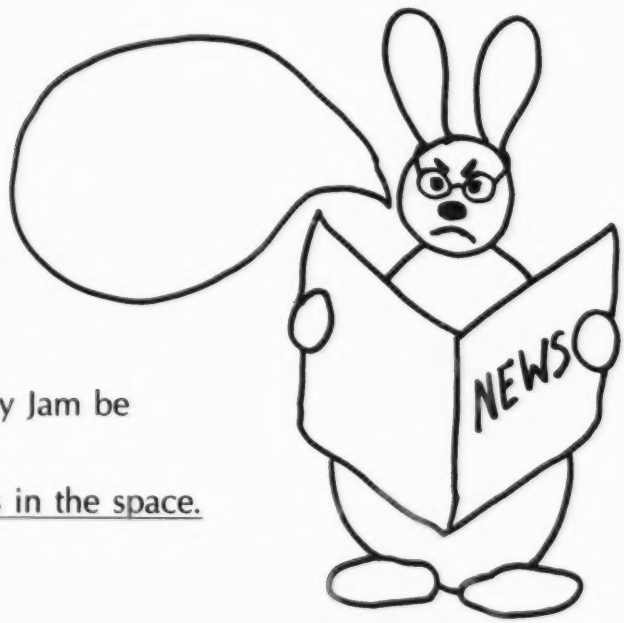
2. We must work for a cleaner world _____ before it is too late.

3. _____ can help to clean up the air.

4. Let's talk to everyone about _____ air.

6. Jelly Jam _____ trees and bushes that shade buildings on hot days.

9. When they think about living in a dirty, crowded Bermuda, many people feel _____.

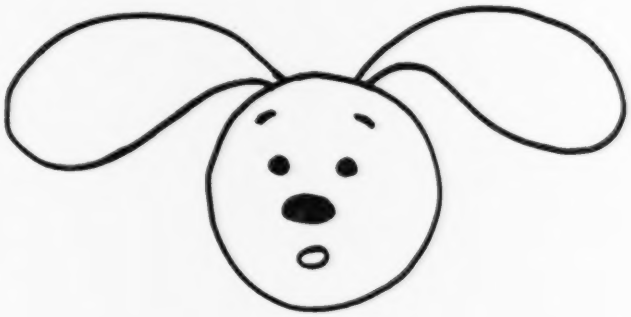


What might Jelly Jam be saying?

Write the words in the space.

Part Six: CONCLUSION
BOOKS TO READ AND WRITE

Talk about how to clean up our earth to ANYONE who seems interested.



Ask your parents, teachers and librarians to help you find books about pollution and the environment.

Write the names of those books here.

_____

_____

_____

_____

Pretend that you are going to write a book about stopping pollution in Bermuda. Choose the most important things that you would write about. Circle them.

noise pollution
oil spills
garbage in the ocean
too many buildings & roads
sulphur dioxide in smoke
air pollution from ships
bug sprays
poisons from cars
too much trash
chemicals in water
poisons in the soil
trash in special places
litter on beaches & roadsides
smoking
having too many things
too many people
too many cars
something else

What helpful ideas do you like best? Underline them.

composting
building bluebird houses
recycling
vegetable gardening
saving electricity
having small families
reusing
collecting things & giving them to people who need them
writing letters to government
buying less
saving water
using safe soaps & cleaners
picking up litter
planting useful trees
something else

GARDENING AND FISHING

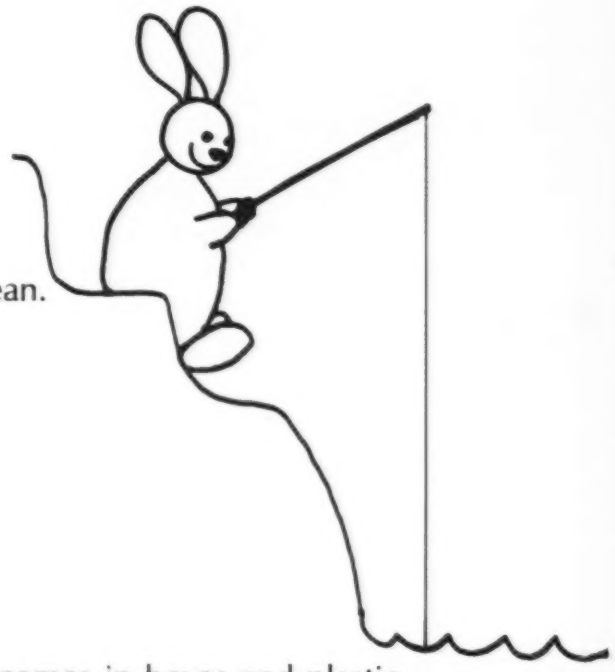
Because Bermuda is an island, almost everything comes here by ship or plane. Ships and planes use oil and make pollution.

Also, because Bermuda is an island, it would be hard to make many of the things that we need. However, we can get more of our own food from Bermuda.

Plant a vegetable garden. Plant fruit trees.

Instead of using man-made chemicals to make your plants grow well, use the safe compost that you have made.

Draw some cabbage plants coming up in rows.



Fish in a place where the water is clean.

Draw a rockfish at the end of my line.

The food that is brought to Bermuda comes in boxes and plastic. If we grow our food here, there will be less trash to harm our land.

If our vegetables, fruits and meats are grown without chemicals, they will be safer for us to eat.

If you grow your own food, it will cost less, too.

LAWS FOR A CLEAN WORLD

We need more **laws** to help clean up our land, water and air.

We also need to have people follow the laws that are already made.

Your class can write to the people who make the laws of Bermuda.

Tell them about any new laws that you would like them to make or any laws that are not being followed.

The leader of the party in power is called the **Premier**.
The Premier's name is: _____
The address is: _____
_____
_____

The head of the other party is called the **Leader of the Opposition**.
His or her name is: _____
The address is: _____
_____
_____

The **Members of Parliament** from your **parish** are:

_____ _____
_____ _____
_____ _____
_____ _____

Their address is: **House of Assembly**
Hamilton 5

WAR

We can also write letters to the leaders of other places about other kinds of pollution that we have not yet talked about in this book.

Of course, the worst kind of pollution comes from war. New bombs can make the air, water and soil become **radioactive**.

You cannot see, smell, taste or feel radioactivity. However, too much radioactivity is very dangerous.

I hate war. Draw me being hurt.

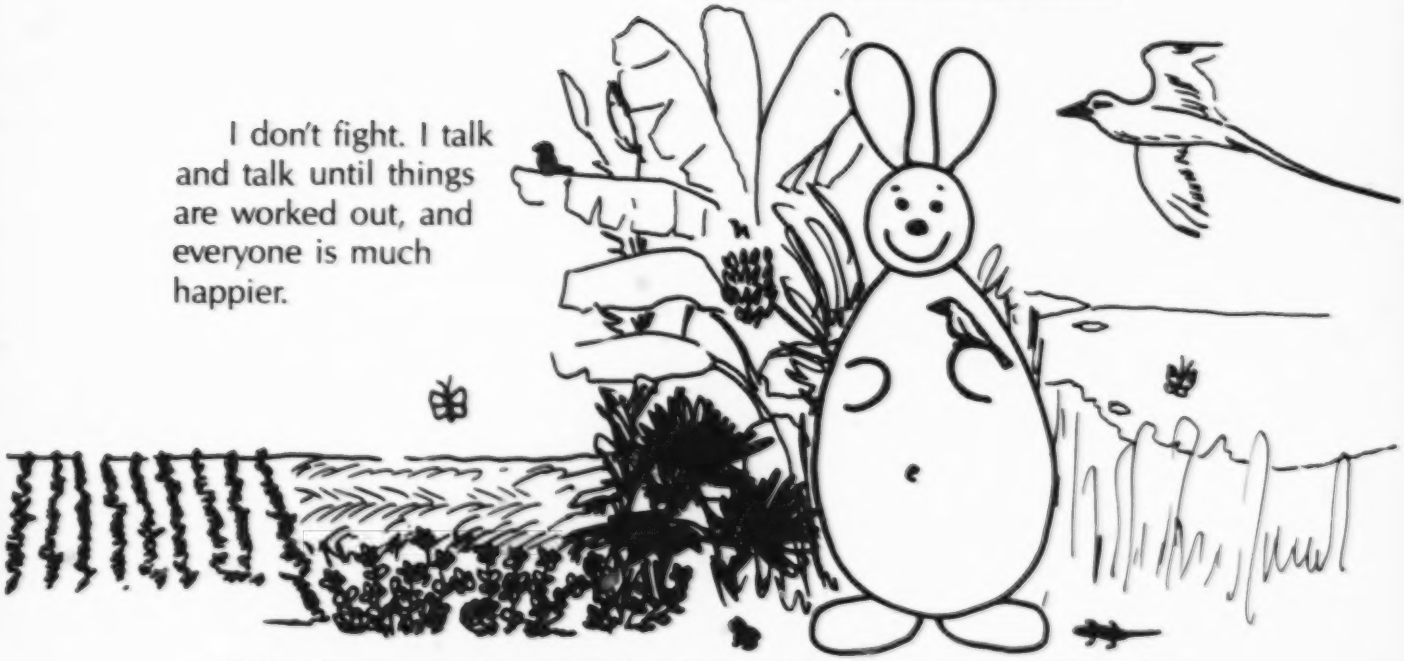
If people do not agree with each other, they can work out their problems without fighting.

Write a letter to the Premier.

(See page 50.)

Ask the Premier to work for peace between all countries.

I don't fight. I talk and talk until things are worked out, and everyone is much happier.



What have you done at school or at home to stop a fight and to make peace?

_____

_____

POLLUTION = MONEY

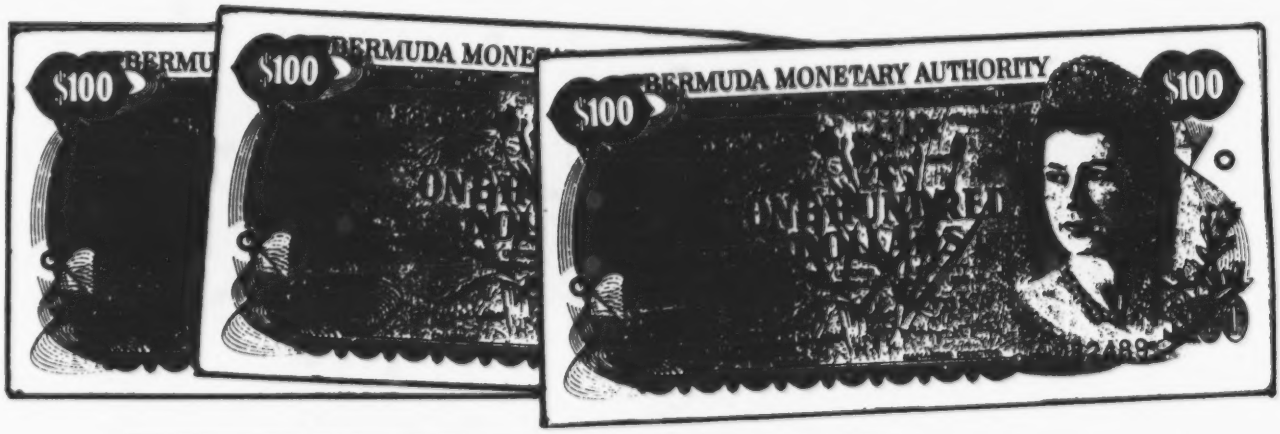
Cleaning up pollution costs money. We pay for pollution in many different ways.

1. Cleaning up litter costs money. We must pay people to pick it up along roadsides.
2. Having Public Works pick up hundreds of kilograms of trash costs money, too.
3. Getting rid of trash costs more money.
4. If land is not used carefully, Bermuda will have too many people and homes. That will make more pollution. Tourists will not want to come here as much. Then we will not make as much money.
5. People cannot drink polluted water. It costs money to clean the water.

Millions of these bills are spent on pollution problems every year.
Colour the money orange.

BEST COPY AVAILABLE

6. If we swim in polluted water, we may get sick. People do not like to swim in polluted water. We will lose more tourist money.
7. Too much noise can make people feel unhappy and get sick. We will have to pay for doctors' care.
8. Eating too much spray in fruits and vegetables can make people sick.
9. Too many chemicals in the ground can harm the soil. Then food will not grow well. It will cost more money to buy food from places where the soil is poor.
10. It costs a lot of money to clean up the beaches. It would cost millions of dollars to clean up an oil spill, if it could be done.
11. Our Earth is already too polluted. If we DON'T pay money NOW to clean up our Earth, we will pay MORE money later.



Now ask your teacher to help your class write about any questions you have about pollution. Write to:

The Ministry of The Environment
Government Administration Building
Parliament Street
Hamilton 5

POLLUTION COSTS TOO MUCH MONEY.
WE MUST CLEAN UP OUR EARTH!

What can you do to help keep Bermuda a wonderful place to live?_____

_____

BEST COPY AVAILABLE

REVIEW PUZZLE

Using the ideas on this page, do the crossword puzzle on the next page. Make sure you use a pencil.

ACROSS

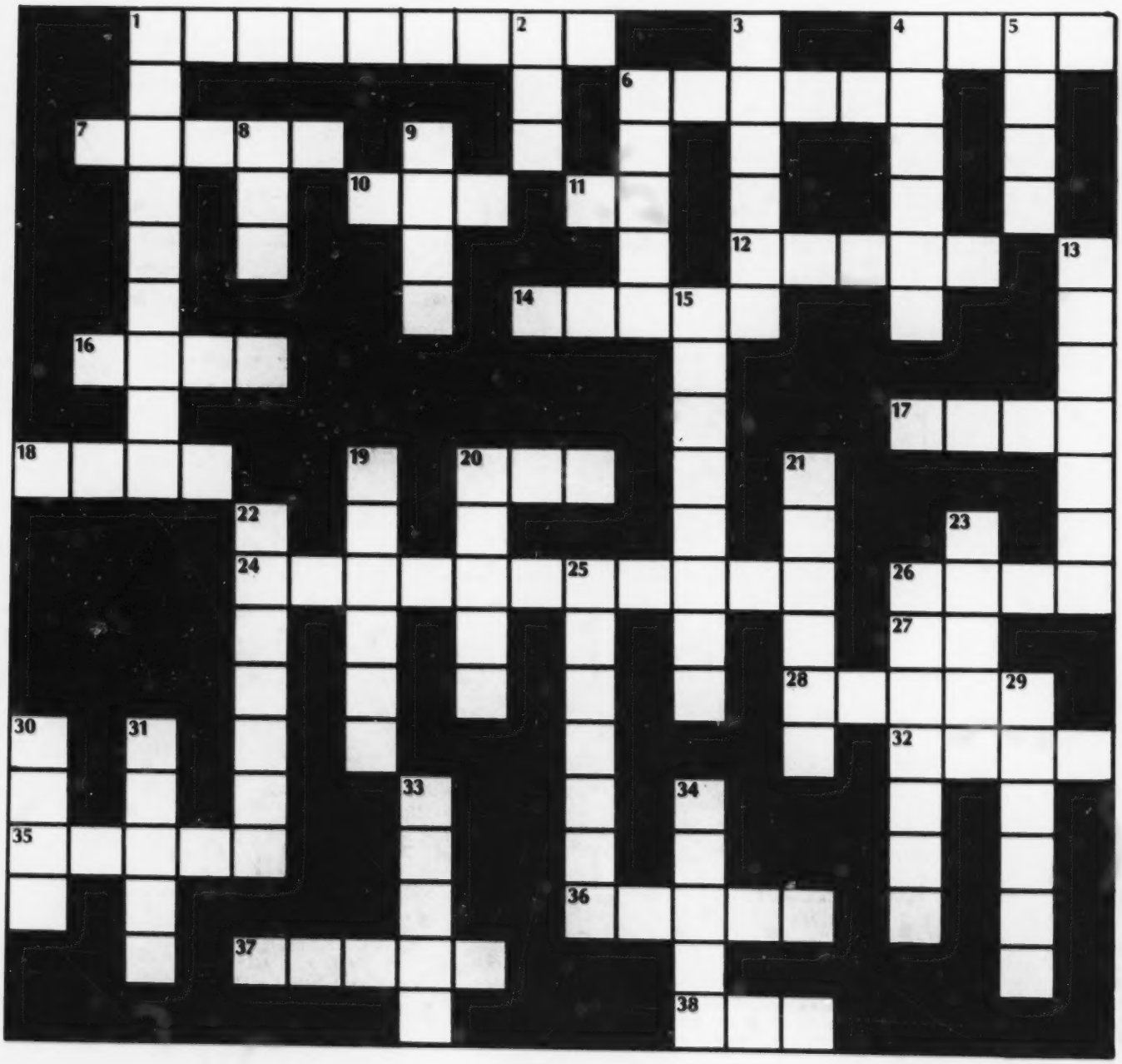
1. Jelly Jam is the People _____.
4. Trees and vines _____ us to keep cool.
6. Most pollution is made by _____, not by plants and animals.
7. Everyone must try to keep the air, land and water _____.
10. People should _____ eat a lot of food when it is hot outside.
11. It is not healthy to eat fruits and vegetables with sprays _____ them.
12. _____ air can come from cars, buses, planes, boats and places that make electricity.
14. Air pollution may have dangerous _____ in it.
16. Helpful people _____ away things that they no longer need.
17. It is fun to _____ at a clean ocean beach.
18. We spend money to clean up littered _____.
20. If we care, we can _____ the fight against pollution.
24. We can save money if we stop using so much _____.
26. If we carry our own shopping _____, we will not waste so much paper and plastic.
27. Jelly Jam asks each of _____ to help stop pollution.
28. We must clean up our _____.
32. All living things _____ water and air.
35. Open burning pollutes the air with dirty _____.
36. We can usually get rid of insect pests without using a bug _____.
37. Our ears and health can be hurt by _____ pollution.
38. Having too many things can make people _____.

DOWN

1. Good laws can help to stop _____.
2. It is a good idea to _____ the fruits and vegetables that grow in Bermuda.
3. Too many very loud _____ can make people feel unhappy.
4. Clean air and water are important to our _____.
5. We could not _____ without plants.
6. Many kinds of living things need clean water in our _____ and bays.
8. Smoking pollutes the _____ inside our homes and our lungs.
9. Compost helps to make good _____.
13. We must preserve safe places for people and _____ to live.
15. People need outdoor _____ in clean air.
19. Jelly Jam says "_____" when he asks us to help clean up our world.
20. Too many chemicals can pollute the _____.
21. People get _____ from the air, but fish get it from the water.
22. If we _____ bottles, cans and papers, we can prevent lots of waste.
23. People who really care about our world try not to _____ anything.
25. We should not use poisonous sprays to kill any _____.
26. _____ plastic gives off dangerous gases.
29. Jelly Jam puts on more clothes before he turns on his _____.
30. _____ are fun to catch and good to eat.

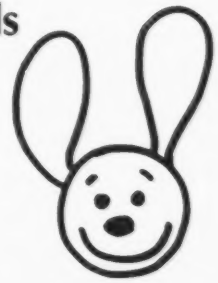
31. Toads and _____ are important insect eaters.
33. People should not throw _____ into ponds or caves.
34. If your yard is a nice place for _____, they will help you by getting rid of many harmful insects.

air	dirty	frogs	insects	oxygen	recycle	swim
animals	earth	gases	land	people	sad	trash
bags	eat	give	live	please	smoke	us
birds	electricity	health	need	pollution	soil	waste
burning	exercise	heater	noise	ponds	sounds	water
clean	fish	help	not	preserver	spray	win
			on			



GAMES

A Secret Code For Jelly Jam's Friends

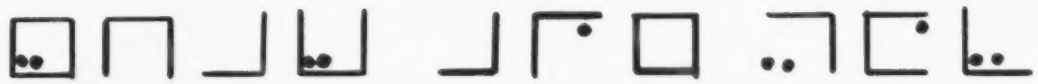


The first two letters are written for you. Can you write the rest of the letters by using the code?

A	B	C
D	E	F
G	H	I

J	K	L
M	N	O
P	Q	R

S	T	U
V	W	X
Y	Z	?



W H _ _ _ _ _ _ _ _

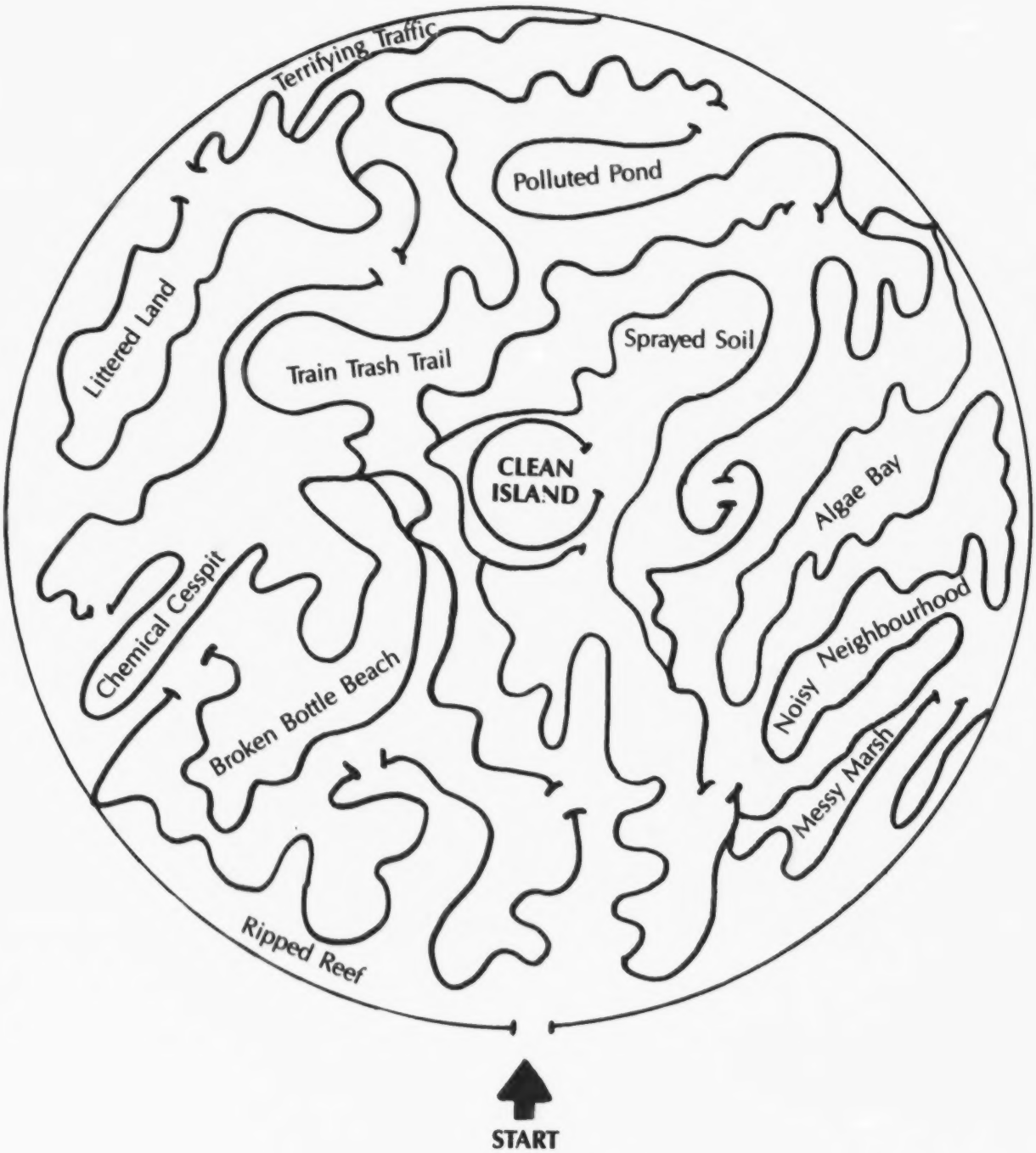
_ _ _ _ _ _ _ _ _ _ _

_ _ _ _ _ _ _ _ _ _ _

_ _ _ _ _ _ _ _ _ _ _

Can you find the way to a clean island?

Don't get trapped in the polluted places.



Part Seven: JELLY JAM'S ANSWERS

(Some questions can be answered correctly only by you!)

Page 3. The word "yes" should be checked. Everyone pollutes in some way. Each one of us must try to pollute as little as possible.

Page 4. Circles should be drawn around the car, home, ship, bottle and power plant.

Page 5. The leaf in water should be circled. Its environment has not been polluted. The other leaves will turn yellow and curl up.

Page 6. Everything should be coloured. The Bermuda cedar, the Bermuda palmetto, the Bermuda skink and the cahow should be circled. The Bermuda skink, cahow, longtail, Bermuda cedar and green turtle should be underlined.

Page 7. Jelly Jam should look sad. Something weighing one kilogram might be about one litre or one quart of milk. Be sure to include X's and circles in the right places.

Page 8. 56,000 people × one kilogram = 56,000 kilograms per day.

365 days × 56,000 kilograms = 20,440,000 kilograms per year.

More than thirty years.

Styrofoam cup.

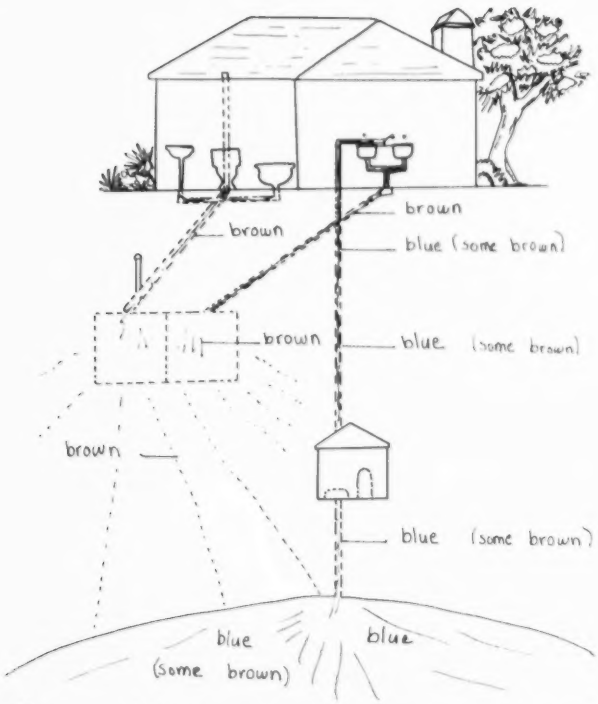
Page 13. Everything can be circled!

Page 14. Brown. The compost should be coloured in the box.

Page 16. 5 paper
1 metal
3 light plastic
2 hard wood
4 cardboard

61

Page 22.



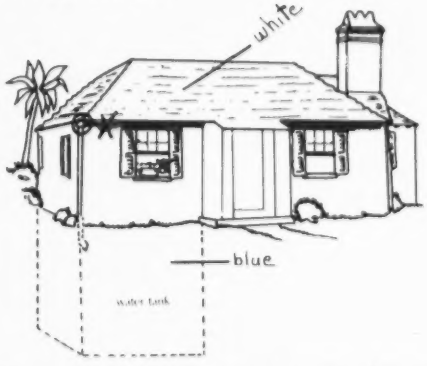
Page 26. Usually a quick shower uses less water so the second day is correct.

20 litres × 5 number of flushes = 100 litres.

100 litres for one person × 4 number of people = 400 litres.

Page 27. You could add a Portuguese man of war, ruddy turnstone, ghost crab, humpback whale, jellyfish, lobsters, purple sea snail and a red hind.

Page 28.



Page 29.

plastic cups	pop tops from cans
cans	boxes
paper	napkins
broken fishing poles	plastic coolers
plastic bags	bottles

Page 30.

1. clean water
2. lens
3. clam
4. cesspit
5. ocean
6. pond

BEST COPY AVAILABLE

Page 31. 1. They would die.
2. Bottom arrow points to the flower.
3. Red poinsettia flower.

Page 32. Finish the face and the ears. Write in the word "Please."

Page 33. Draw Jelly Jam.

Page 34. Finish the face. Colour the dots brown in each picture. Bluebirds have blue heads, backs and tails. Their breasts are reddish, and their bellies are white.

Page 35. You will see black on the bottom of the plate. It is carbon.
Check _____yes or _____no.
This kind of pollution comes from cars, buses and the smokstacks of ships and buildings.

Page 36. Tar should be on Jelly Jam's feet. A tar ball is black and can be round or flat.

Page 37. fly – swatter
ants – wet rag
spider webs – broom
cockroach – giant crab spider or something to close up holes and cracks in houses
bugs that eat vegetables in the garden – marigold plants
more cockroaches – giant crab spider or something to close up holes and cracks in houses

Page 38. One might draw a bluebird, catbird, Bermuda skink, whistling frog, giant toad, spiders, ladybug and a lizard.

Page 39. Suggested answers:
1 people walking
4 two cars with four people in each car
6 eight cars with one person in each car
3 one bus carrying 51 people
2 eight people on push bikes
5 eight people on motor bikes
(Some people may not agree with all these answers.)

Page 41.

1. c	3. a	5. b
2. d	4. f	6. e

Page 42. Blue circles should be drawn around iron, T.V., toaster, washing machine, lamp, electric stove and stereo. Mark a red X on the iron, T.V., lamp, electric stove and stereo. The toaster and washing machine turn off by themselves!

Page 43. There should be a red X on the heater. Jelly Jam's sweater might be black, dark blue, green or brown.

The black paper is warmer. Dark colours take in heat.

Page 44. White roofs throw back (reflect) heat. The hat might have a wide rim to shade Jelly Jam's face. The leaves of the poinciana tree are small and look like this drawing.

Page 45. Jelly Jam's life jacket is orange. Don't forget his ears!

The wind can push flags and kites. It can also help to move machines that will make electricity. This kind of electricity does not pollute, and it is cheaper than many other kinds.

Pages 46 and 47.

ACROSS	DOWN
1. burning	1. birds
5. slow	2. now
7. sick	3. you
8. home	4. clean
10. noises	6. likes
11. sad	9. mad

Write what Jelly Jam might be saying while reading the newspaper.

Page 48. Write, circle and underline your answers on page 48.

Page 49. Cabbage plants are round and light green. The rockfish is usually blackish-brown with spots on its sides and a straight-edged tail. It also has a large mouth.

Page 50. Ask your parent or teacher to help you.

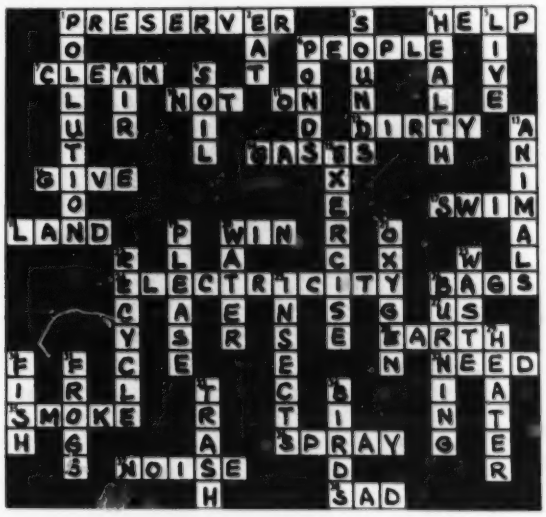
Page 51. Jelly Jam might have a black eye and a broken ear and leg. Try to suggest ideas about how the Premier can work for peace. Then write what you have done to make peace.

Page 52. The money should be coloured. Bermuda bills are pretty!

Page 53. Give your pollution questions to your teacher.

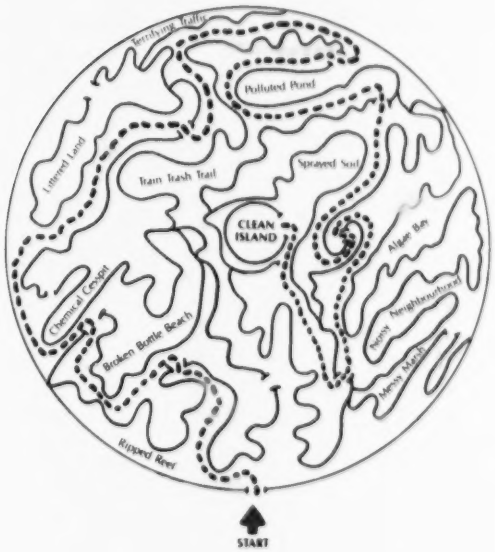
You can help Bermuda by not littering, and by buying well-made toys, taking care of your toys, fixing broken toys and sharing toys. Planting a garden, fishing, composting and saving electricity and water are other important ways to help.

Pages 54 and 55.



Page 56. What are you doing to help preserve our environment?

Page 57.



65

MORE JELLY JAM

Jelly Jam has eight different posters for you. If you would like them, please send a money order in United States money for $20.00 to:

Jelly Jam's Store
P.O. Box 12834
St. Petersburg, Florida 33733-2834
U.S.A.

There is also a *Teaching Guide* for teachers and parents. This guide may be ordered from:

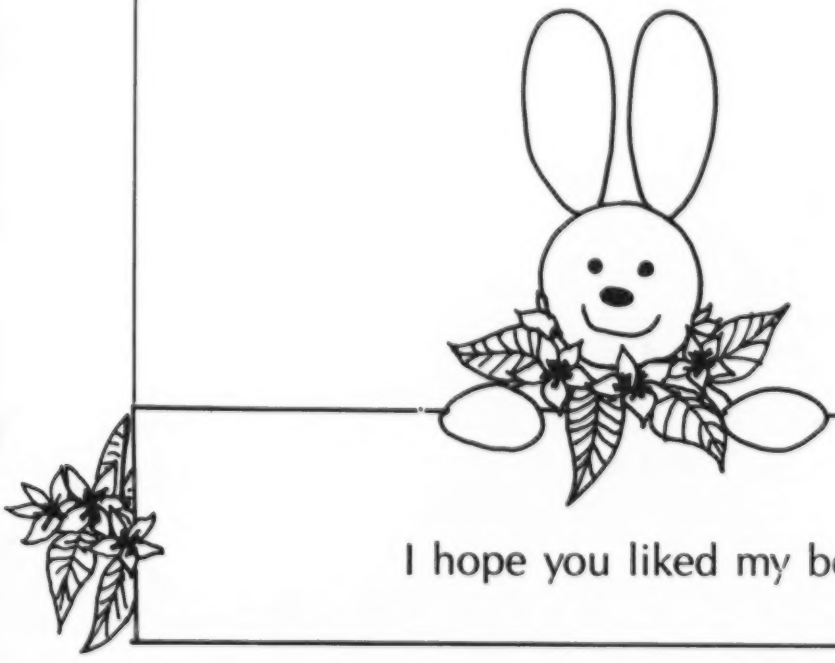
The Bermuda Junior Service League
P.O. Box HM 1226
Hamilton 5, Bermuda

Copies of *Bermuda's Delicate Balance* may be ordered from:

The Bermuda National Trust
P.O. Box 61
Hamilton 5, Bermuda

When you are finished with this book:

- Keep it at school.
- Keep it at home.
- Share it with a friend.
- Give it to your school library.



I hope you liked my book!

Copyright © 1985 by Judi Friedman

U.S. edition Copyright © 1972 and 1983 by Judi Friedman.

1972 United States edition published by Educational Methods, Inc.

1983 revised United States edition published by Our Natural World, a division of Johnny Reads, Inc., Educational Publisher.

1985 Bermuda edition published by Our Natural World and commissioned and distributed by the Bermuda Junior Service League.

Photo credits: Lou Friedman.

All rights reserved. Reproduction of any part of this publication (including this activity book and all posters, decals, slides, transparencies, buttons, pins, recordings, and other materials that may be part of the total publication) is strictly prohibited unless permission is granted by the publisher.

Produced in the United States of America.

ISBN 0-910812-29-2

Our Natural World
2221 Calexico Way South
P.O. Box 12834
St. Petersburg, Florida 33733-2834
U.S.A.

(Phone: 1-813-867-7647)

JELLY JAM, THE PEOPLE PRESERVER
BERMUDA EDITION
ACKNOWLEDGEMENTS

Jelly Jam and I would like to thank the Bermuda Junior Service League for being concerned enough about the children of Bermuda and the environment of Bermuda to commission the writing of this book.

Further thanks go to the following organisations and individuals who contributed to both the contents of this book and to its accompanying *Teaching Guide*.

Bermuda Biological Station: Dr. Wolfgang Sterrer

Bermuda High School for Girls: Pat Benbow

Bermuda Junior Service League Teaching Guide Committee: Fran Tucker, Jean Ward

Bermuda National Trust: Malcolm Kirkland

Clean Community Coordination Committee and KBB: Susan Hill

Gilbert Institute: Veronica Todd

Ministry of Education: Ron Johnson, Dr. Marion Robinson, Dr. Erskine Simmons, Molly White

Ministry of the Environment:
- Department of Agriculture and Fisheries Conservation Officer: Dr. David Wingate
- Department of Agriculture and Fisheries: Barry Phillips, Jeff Tiberi
- Department of Agriculture and Fisheries – Museum, Aquarium and Zoo: Sally Bernard, Katie Boyer, Rosalind Collins

Ministry of Works and Housing: Martin Hughes, George Ross

Port Royal School: Alan Leigh

Premier The Honourable John Swan and Mrs. Swan

Saltus Grammar School, Junior Department: Stewart Adams

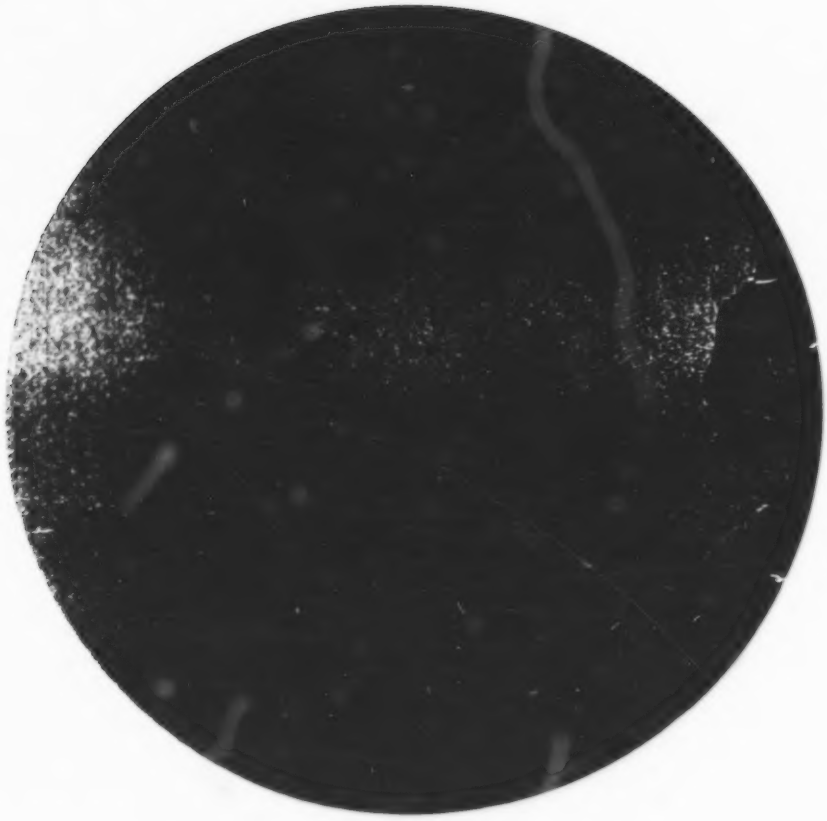
Saltus Grammar School, Preparatory Department: Shirley Bacon

Save Open Spaces (S.O.S.): Reid Kempe

United Bermuda Party – Executive Office: W. Edward Williams

Other helpful sources include: Jan Macdonald and Bermuda Engineering Associates

Finally ... very, very special thanks go to Nancy Wadson, Elysa Burland and Brenda Spearing of the Bermuda Junior Service League; Linda Young of the Bookmart; and the authors of *Bermuda's Delicate Balance* – especially Stuart Hayward, co-editor.



REMEMBER
IT'S YOUR EARTH
and
THERE IS ONLY ONE

BEST COPY AVAILABLE